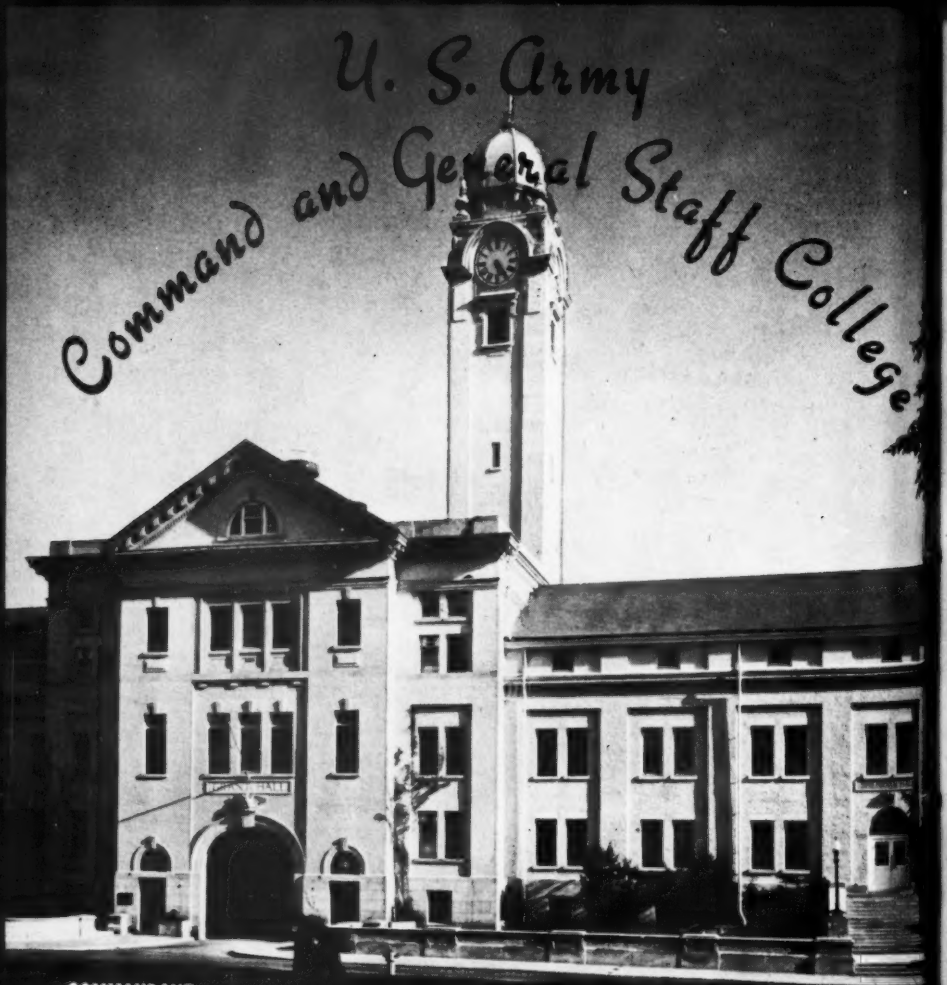
MILITARY REVIEW

U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE
FORT LEAVENWORTH, KANSAS

NOVEMBER 1958 VOLUME XXXVIII NUMBER 8



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The printing of this publication has been approved by the Director of the Bureau of the Budget 19 June 1956.

MILITARY REVIEW—Published monthly by U. S. Army Command and General Staff College, Fort Leavenworth, Kansas, in English, Spanish, and Portuguese. Entered as second-class matter August 31, 1934, at the Post Office at Fort Leavenworth, Kansas, under the Act of March 3, 1879. Subscription rates: $3.50 (US currency) a year in the United States, United States military post offices, and those countries which are members of the Pan-American Postal Union (including Spain): $4.50 a year in all other countries.

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PLEASE READ IT AND PASS IT ALONG

THE ESSENCE OF TIME

Colonel V. J. Gregory, *United States Air Force, Retired*

THE pages of history must be flipped back nine centuries to bring into focus a conqueror who stands among peers in the art of timing. He is William of Normandy.

Such appraisal is open to challenge. The names of mighty sovereigns and of military giants spring to mind. The earth shakers of the millennium reached for continents, exploited vast land masses, and created empires.

Genghis Khan conquered China. Osman founded the Ottoman dynasty. Tamerlane swept through Turkistan, Persia, Russia, and India. Cortes strode through Mexico; Pizarro placed his heel upon Peru; Frederick the Great expanded Prussia; Gustavus I and Gustavus II built an empire around the Baltic; and Ivan III established Muscovy as the largest state in Europe. Napoleon embraced and carved Europe. These and many others placed their stamp upon history. They cornered the real estate market. The time coordinate was of minor significance in their vast sweeping operations, engulfiing opposing forces and resistless masses occupying space objectives.

Some of these were the equal of, and a few perhaps greater than, William as military captains, but none appears to have excelled him in the category of military timing, considering the strategic scope of his design, extension of time involved in preparatory projects, execution of the plan, and sustaining consequences of his victory.

Time rather than space was of prime importance to William. His objective was the crown of England. In reaching for this plum he utilized time to his advantage along a progressive course of action.

William established his independent authority over Normandy at the age of 20. His life in peril, the young duke obtained the aid of Henry I of France in subduing rebel forces at Val-des-Dunes. A year later William returned the compliment by helping the French king defeat Geoffrey Martel, count of Anjou. Envious foes sheathed their swords as William's star began to twinkle.

Early Dangers

Prior to securing his commanding position, William had covered a hazardous obstacle course. Succeeding to the dukedom at the age of eight, upon the death of his father, Robert I of Normandy, in 1035, he was placed in the hands of guardians. They managed to train him for his role in history during a contentious period. Three of his guardians were murdered and William's life remained in jeopardy during his minority. In a strife-ridden environment the young duke sharpened his senses, developed inner resources, and learned the lessons of warfare through actual field experience. Victories he did not regard as ends but as means toward ambitious goals.

Time rather than space was important to William the Conqueror. He excelled in military timing, extension of time involved in preparatory projects, execution of the plan, and sustaining consequences of victory

The Norman duke turned his eyes toward England where his cousin, childless Edward the Confessor, sat on the throne. William placed an "x" on his time chart and the clock began to tick. At the age of 24 he crossed the Channel for a visit with his royal cousin. The visit was not confined to a game of horseshoes. William made a careful estimate of the political and military situation. He learned that Norman influence throughout England was being resisted by Godwin, Earl of Wessex, whose daughter was married to the monastic king.

The Norman duke observed that his cousin Edward did not possess the will nor the authority to unite Anglo-Danish and Norman factions. England was in need of a strong hand, William reflected, noting that frequent eruptions among contending earls had vitiated national strength, rendering England vulnerable to foreign assaults. Departing, William probably received Edward's nod toward the succession. Looming as the chief antagonist was Godwin's eldest son, Harold.

Returning to Normandy, William revised his timetable, allowing an indefinite period for Edward's life cycle to close before pressing his claim for the throne. He realized that the crown would not be offered to him voluntarily; he would have to fight for it, and Harold, whose claim was as invalid as his own, held the advantage of interior lines. William decided to project a long term strategic plan in accordance with his main objective.

Preparations

William strengthened his government, centralized his authority, and compelled his vassals to contribute levies and services to the armed might. He paid particular attention to his cavalry arm. Few dared to challenge his knights on the field of battle. The French king, dukes, and barons of neighboring provinces cast anxious eyes toward the Norman duke.

William's dynastic prospects rose when, at the age of 26, he married Matilda, daughter of the powerful Baldwin of Flanders. Matilda traced her descent from Alfred the Great, a prop which the Norman duke used in his ambitious project.

A year later William repulsed the combined invading armies of Henry I of France, his former ally, and of Geoffrey Martel, in the Battle of Mortemer. Four years later the Norman duke again blunted the invasion thrust by surprising the French rearguard at Varaville on the Dive. Flush with these victories he annexed the county of Maine.

William was now 36, regal in appearance, tall and powerful, whose presence invited respect and compelled obedience. By progressive steps he had proved his capacity for the exercise of authority on a larger stage. His time chart indicated that 12 years had elapsed since his visit to England. Edward remained on the throne but the strings were being pulled by Harold, Earl of Wessex, who had succeeded his father, the late Godwin, as the virtual dictator of England. William bided his time.

Within a year Harold fell into his embrace. It was an event of unusual importance to William. The Saxon Earl of Wessex, shipwrecked on the French coast, was seized by the Count of Ponthieu. William sprang to the rescue and,

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after entertaining Harold, exacted a promise from him sealed by a sacred oath. Harold agreed to support William's candidacy upon the death of Edward the Confessor. Graciously William released his rival.

Death of Edward

Report of the death of Edward the Confessor reached William in January 1066. With it came news of Harold's accession to the throne. The Norman duke swung into action. Time was of the essence.

For his undertaking William sought approval of the Church, support by amenable neighboring knights, and a transport fleet. Overtures were made to the Pope who, recognizing the validity of Harold's oath, sanctioned the proposed expedition. Since William's vassals were limited to 40 days of duty a year, considered inadequate for the campaign, appeals for voluntary service were made to knights and barons, the promised rewards being division of the spoils. They flocked to his colors at St. Valéry-sur-Somme from his own Normandy, Flanders, Brittany, Anjou, Maine, France, and Italy. They agreed to supply a fleet of 700 transport ships, adequate for the Channel crossing of 12,000 troops, including 4,000 mounted knights.

The job of welding diverse foot and horse contingents into a unified combat force was undertaken by William. Archers, crossbowmen, and pikemen as well as the mounted chivalry from nearby provinces and distant points fell into line with the duke's orders, eager for adventure in a new land across the Channel. Meanwhile, ships were being built and outfitted in the French ports.

By 12 August troops were ready for embarkation. Contrary winds, however, caused repeated postponements. In addition, William knew that Harold's fleet was patrolling the southern coast of England. His own boats, the duke reasoned, were built for transport, not for fighting. In spite of unfavorable conditions, William was importuned to sail. The troops were becoming restive, difficult to control. But William remained resolute. Years of planning and preparation were not to be sacrificed by an untimely act. He had an instinct for psychological timing.

August passed; September brought with it a chill from the north, ushering

in the fall season. Geese were winging southward, honking warnings. William's advisors feared that equinoctial storms would wreck the entire enterprise. His advisors failed to understand the difference between awareness of time and the utilization of time. William stood firm.

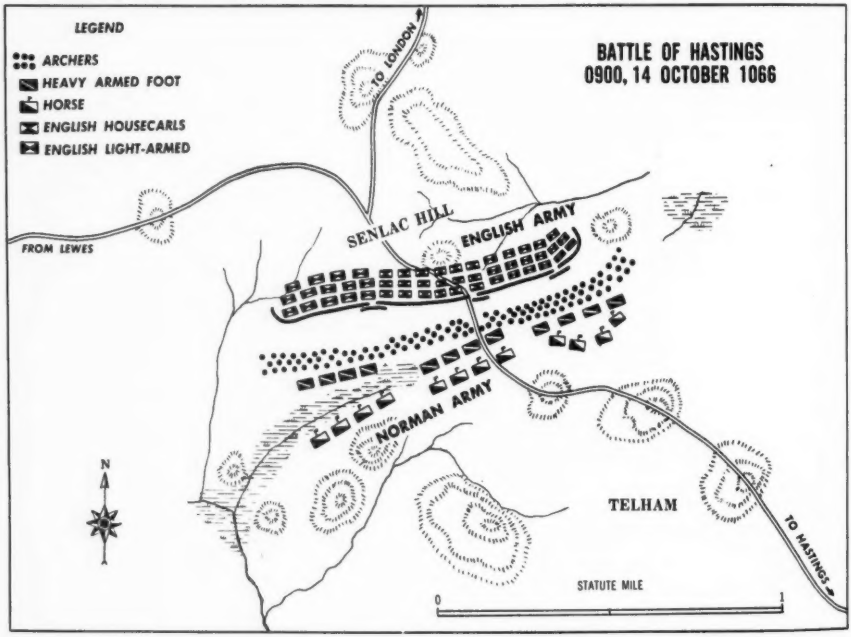
At last he learned that Harold had withdrawn the coast fleet; winds shifted to the south in his favor and he gave the

signal to sail after midnight 28 September. The 60-mile crossing was negotiated with the loss of only two boats; at dawn the fleet anchored at Pevensey on the Sussex coast. There was no opposition.

Norman Landing

Report of the Norman landing reached King Harold at Stamford Bridge near York in northeastern England, where he had crushed a Norse invasion force led by the Norwegian king, Harold Hardrada. Harold stopped the celebration, regrouped his Saxon housecarls, and ordered a forced march of 200 miles over the old Roman road back to London.

Setting the pace for his mounted troops, the Saxon king brooded over the many problems which had beset him since his coronation. Internal conflicts among warring earls and acts of rebellion in various parts of his kingdom proved difficult to manage. But the crowning blow was the defection of his brother Tostig who had persuaded the Norwegian king to stage an invasion. He had put a swift end to that adventure, Harold mused grimly, recounting how his household troops, marching from London at a forced pace, fell upon the invaders in a surprise move, breaking through the Norse ring of interlocking shields. Among the slain were King Harold Hardrada and Tostig. In the dust lay the Norse standard, the black raven.



Turning his mind to the new challenge, Harold realized that he had been premature in withdrawing his fleet guarding the southern coastline and further, that his reliance upon expected seasonal storms to discourage a channel crossing had come to nought. He had no quarrel with Normandy, Harold reminded himself. Rather, it involved William who,

operating as an individual and backed by mercenaries, was projecting himself as an intruder into the affairs of his kingdom. What disturbed Harold was that William should presume to claim the right of succession to the English throne. As a warrior-king Harold faced the reality of settling the issue by force of arms.

Harold, in the van of his victorious housecarls, reached London within five days, stopping briefly to allay the fears of the city, await the arrival of his slower moving foot elements, and confer with court advisors. He listened to cool heads entreating him to delay the advance toward Hastings in order to rest his weary troops and to fill the gaps in his depleted combat force with trained replacements due from the north. In addition, he was counseled to draw his enemy farther inland, away from his base of supplies. Harold rejected such advice, deeming it urgent to plunge onward and to recruit local levies for his army. He was incensed by reports that William was ravaging Kent and Sussex.

Saxon Defense

A forced march of 56 miles in 48 hours brought Harold to Hastings on the eve of battle. He decided to make a defensive stand, being impelled to this decision by the condition of his troops who were extremely fatigued after a month's campaign of fighting and marching. The organization of the opposing army also favored the assumption of a defensive position. Although his housecarls were mounted, they had not been trained in cavalry tactics, horses having been used only for transportation. For foot soldiers to assault a mobile force of mounted knights did not carry with it the prospect of success. Victory, he concluded, was reasonably assured by receiving the attack on ground of his choice.

Harold surveyed Senlac Hill, a defensively strong position, lying athwart the road to London. It was a narrow ridge 150 yards in width and 2,000 yards in length running east and west. Facing south, Harold noted that the forward slope was quite steep, while the inclines on the flanks appeared less precipitous. Local levies were pressed into night labor to strengthen the position by digging ditches, erecting palisades, hurdles, and lining the entire front with brushwood.

In the center of this position Harold planted his standard, the red dragon of Wessex. Around the standard he grouped his housecarls, wearing shirts of ring mail, carrying kite-shaped shields of metal and leather, and armed with the Danish battle-ax. On this bodyguard of proved men from London and Middlesex the king depended for victory. On the flanks he posted light armored levies, armed mainly with the sword, spear, and javelin. Archers were sprinkled throughout the divisions. The Saxon left wing abutted heavy woods; the right was protected by a ravine. Harold estimated that he was secure from flank and rear attacks. To resist initial assault charges Harold posted a division of Kent troops in front of his trench line.

Harold's strength lay in the organization of his combat units. They formed triangular wedges, the base as well as the sides presenting equally resistant qualities. So long as the wedge-shaped unit preserved its unity, it was least vulnerable to attack. Harold had implicit faith in his trained and disciplined army of housecarls holding the central position. The flanks, however, composed of raw levies, caused qualms. Harold wondered if his flank commanders would be able to hold their positions in the heat of battle.

William Advances

The following morning Harold's attention was caught by the movement of troops, sweeping around the base of Telham Hill, a mile and a half south of his

own position on Senlac Hill. They were marching into the narrow valley between the two hills. By the side of the 44-year old Saxon monarch stood his brothers Gyrth and Leofwine. They continued to observe Norman foot soldiers and knights advance in disciplined ranks, their armor flashing in the morning sun. Glancing toward the top of Telham Hill the three brothers noted a lone mounted figure.

From his command post on Telham Hill, William, the Duke of Normandy, peered across the narrow valley to observe the deployment of the Saxon lines. It was 14 October 1066. He had waited 15 years for this moment. In the test confronting him William realized that either he would emerge as the next king of England or perish in the rubble of a nightmare.

Continuing his survey William noted the natural advantages held by the opposing forces. The sharp incline leading to the Saxon standards would be difficult to scale by his armored cavalry, William conceded. The flanks, however, appeared less formidable, he noted, considering means of probing the line for weak points.

Below him in the valley his lieutenants, Roger de Montgomery and William Fitzosborn, were deploying the first division composed of archers from France, Picardy, and Boulogne. In the second line heavier armored foot soldiers armed with pikes and short swords were moving into position under the leadership of the Duke of Bretagne. Men from Brittany, Maine, and Poitou made up this contingent. Nobles and knights resplendent in their flashing armor composed the third line. The horsemen, protected by link mail, were armed with the heavy mace, lance, and sword.

Descending into the valley, William was joined by his half brother, Odo, the bishop of Bayeux, carrying the papal gonfalon. The ensign of France and flags of Flanders, Anjou, Bretagne, Burgundy, and Maine fluttered in the breeze. William rode down the line making a final inspection of his armed force. He gave the signal for attack.

First Attack

The lines moved forward. Singing the *Chanson de Roland,* Norman minstrel Taillefer galloped to the front, challenging a Saxon adversary. A Danish ax cut him down, the song dying in his throat. Norman archers quickly advanced and labored up the steep hill. They were repulsed. Waves of armored pikemen, composing the second attack division, rose from the valley, rushed up the slope, and stormed the breastworks. They were hurled back. Then the mailed knights charged, dented Harold's line here and there, but reeled under the onslaught of Saxon axmen.

William paused to regroup his formations. The second charge was similar to the first. The Normans rushed in waves to clash against Saxon steel; heavily armored knights and their mounts fell under the terrific impact of battle-axes. The tight Saxon shield wall held; the wedges remained in position. On the flanks raw Saxon levies hurled stones and swung clubs to beat back their enemy. Suddenly, cries of terror whirled through the Norman lines. William turned in the saddle of his third mount to see his pikemen and knights on the left retreating in disorder, followed by exultant Saxons. Rallying his troops, William swiftly wheeled his reserve cavalry against the charging Saxons, annihilating them. In a flash of time, William discovered the weak spot in the Saxon line. Harold's right flank had failed to hold its formation. The Norman duke saw a chance for victory.

The battle continued, increasing in intensity and violence as the afternoon wore on and the sun cast long shadows in the

valley. The Saxon right flank was reinforced and restored as a unit; the center continued to hold.

William's Strategy

William considered a stratagem to break Harold's flank. He decided to launch an attack against the Saxon right and feign a retreat. The move called for split-second timing to avoid self-disaster. If successful, he would achieve a breakthrough, roll up the flank, and push the attack from flank and center against a demoralized force. William issued orders for an immediate assault, preventing Harold from reaching his right flank in time to checkmate the move. Again time was of the essence.

The attack was made, followed by a sham retreat. The Saxon wedges dissolved in their wild rush after the enemy. William was ready. At the right moment he launched his reserve cavalry against the embattled Saxons and destroyed them.

William now held the advantage. Destiny was in his hands. His knights secured the Saxon flank; they pressed onward toward Harold's center. William quickly ordered his archers to fire their missiles at a high angle so as to penetrate the mass beyond the shield wall. The dense barrage of "howitzer" arrows broke the Saxon ranks.

The king fell, his eye pierced by an arrow. Both of Harold's brothers already had fallen in battle. No one was left to rally the remnants of the Saxon host. Norman knights, archers, and pikemen charged through the stricken Saxon lines, decimating the ranks. Darkness ended the battle.

The saxon housecarls, having pierced the ring wall of the Norwegians at Stamford Bridge, gave way to feudal might at Hastings. The struggle, however, was not one-sided. It was a bitter contest. The Saxons fought stubbornly, yielding to superior combined power of infantry and cavalry only when the odds were hopelessly against them, but not before their leader, the last of the Saxon kings, fell mortally wounded.

The shock tactics of cavalry, combined with the missile power of archers, won the day for William. He controlled his forces in all phases of the action, securing the cooperation of his subordinate chiefs, keeping his assault divisions on the move toward a decisive direction, employing strength in critical areas, and timing his tactical moves to achieve a breakthrough and final victory.

Conclusion

With respect to Harold, it appears that he had misjudged the importance of timing at critical junctures. Premature withdrawal of patrol boats enabled his rival to reach English shores. His insistence upon rushing to challenge William at Hastings without reinforcing his battle weary army with trained replacements proved to be a fatal error in time judgment.

On the other hand, William's timing was unerring throughout a long period of planning, training, and execution.

William the Conqueror continued his advance to London, ruthlessly brushing aside all opposition. Like Charlemagne, he chose Christmas Day for his coronation. This, too, was a delicate time thrust.

AIR TRANSPORT
A Determining Element of Success

Lieutenant Colonel Albert Merglen, *French Army*
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A COMMON assertion, often repeated, is that the study of past wars permits a thoughtful person to extract from the mass of historical events important factors which can be of considerable value for use in the future.

From this viewpoint and specifically in regard to air transport as a determining element of success, three campaigns of World War II will be examined briefly: Norway in April 1940, the Netherlands in May 1940, and Iraq in May 1941. Appearing deep in hostile territory at critical points, utilizing maximum surprise and economy of forces, air transport in these three instances spelled quick victory over an enemy superior in strength and disposed throughout vast, rugged land areas.

By this new means of warfare it was possible, at the beginning of each campaign, to inflict upon the adversary such a physical and psychological stroke that his breaking down was almost immediate. Such was the case in Norway, the Netherlands, and Iraq. The first two were offensive operations and the third defensive. In an attempt to clarify some still not well-known aspects, they will be described here relative to planning, execution, and results from the air transport viewpoint.

Norway Operation

The operation to seize and occupy Norway was a particularly difficult task for the German High Command (Figure 1). For reasons of industrial economy and naval strategy, it involved the invasion of Denmark and the use of that country's airfields. Further, the campaign had to be fought with the least possible air and ground forces and in the shortest time practicable. It was of the utmost importance to Germany not to be forced into a long and expensive-in-means operation through a country of large, mountainous land areas and difficult climate.

The risks were so evident that on 9 March 1940 the German naval commander in chief stated, "It is my duty to outline clearly the character of this naval operation. This enterprise is against all lessons learned by naval history. This latter teaches that mastery of the seas is an essential requirement. We do not have it." He emphatically added, however, "In the history of wars, in many circumstances, have succeeded enterprises run against all principles of war—under the condition of assuring surprise."

It also was essential that the concept of operation should be as imaginative as the objective was bold. In order to assure the safe landings of the naval convoys

Dispersion will play a vitally important role in future warfare. Airborne and air-transported forces, trained to fight independently over large areas, will be better suited than others to wage and win a war

on one hand, and the initial neutralization of the opposing command organizations on the other, the Norway invasion plan included two successive actions to be executed the first day. First, was the occupation by surprise air landings of the two vital points of Oslo and Stavanger.

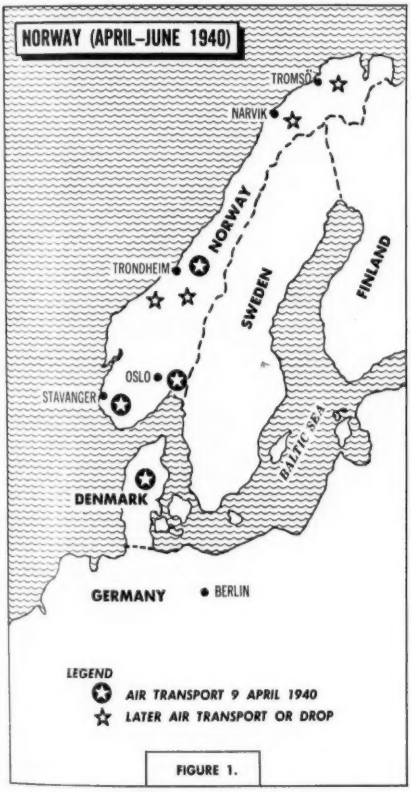

FIGURE 1.

Second, was reinforcement by naval landings.

Oslo was the main objective, not only militarily, but also politically. Its harbor, airport, roads, and railway communications facilities made Oslo the nearest suitable operations base to Germany. It also was the location of the government and the residence of King Haakon. The campaign plan was drawn up with this foremost goal—to seize by surprise the government and command agencies, and the King, so as to permit occupation of Norway without fighting.

Stavanger possessed the harbor necessary for the landing of important forces aimed at the seizure of western Norway.

Air Landings Planned

The air-landing plan was the same for the two towns. At dawn a company of paratroopers would jump and secure the airdromes. They would be followed immediately by an air-landed task force including two infantry battalions, an engineer company, artillery elements with antiaircraft artillery troops, and an aerial control team.

Air transportation means had been made available to "Detachment XXI," commanded by General von Falkenhorst and assigned the mission of occupying Norway. Air elements included seven transport groups with about 550 *Ju 52's* (twin-engine planes carrying 25 equipped soldiers) and some *Ju 90's* (four-engine planes carrying 40 equipped soldiers).

The naval convoys of troops and material left the German harbors in great secrecy on 3 April with most of the units on board warships. The air-transported force took off on 9 April at 0100.

The operation on Stavanger was a success. Preceded by a low-level attack by *Stuka's*, the 3d Company of the 1st Parachute Infantry Regiment quickly captured the airdrome of Sola and a few minutes later the task force of the 193d Infantry Regiment was air landed. Link-up was made late in the morning with the main force arriving by sea.

Meanwhile, the essential operation at Oslo ran into difficulty. On 8 April the first staff officer of "Detachment XXI," Colonel Pohlmann, arrived in civilian clothes in Oslo to lead the air-landed troops. An officer of the Embassy was

waiting for the naval convoy on a small steamship in the fiord. However, adverse weather conditions prevented the scheduled execution of the landing plans.

At dawn on 9 April a heavy fog covered the ground and the paratrooper company could not jump. The first transport planes were met by strong antiaircraft fire and assault aviation had to intervene in force to neutralize the airfield at Fornebu. The task force of the 324th Infantry Regiment began to land at 0840, about three hours behind schedule. By noon, Colonel Pohlmann had only six companies of the 324th Infantry and two companies of the 1st Parachute Infantry. The latter had been air transported as a reserve to Oslo.

Delays Create Confusion

To complicate matters further, the sea landing also was late. The cruiser *Blücher* had been sunk in the fiord as she transported the staffs of the naval convoy, the 163d Infantry Division, and the air force. Complete disorganization prevailed in the landing force.

At this time, near Oslo were located the 1st Norwegian Division to the south and to the north, the 2d Division; yet the capital was occupied by only eight German infantry companies, air landed. The surprise German attack in the heart of the country had weakened the spirits of the populace, overthrown the defense plans, and aroused irresolution.

The air-landed troops had struck the decisive blow in the first hours; and the air transport had permitted the rapid arrival of reserves to overcome the crisis in the first days. It should be pointed out, however, that the failure of the *coup de main* had allowed the King and the government to escape and subsequently organize armed resistance.

During this campaign air transport again proved its invaluable utility by its ability to reinforce the German garrison at Narvik which was standing with its back to the Swedish border, hard-pressed by sea-landed French and British forces. On 19 May the German Ground Forces Commander summed up the situation as follows: "The strength of the Narvik force being weakened severely by losses, all is now dependent upon the speedy arrival of reinforcements by air transportation."

Despite bad weather and intervention of British carrier-based fighters, the reinforcement was executed. About one battalion of paratroopers and two companies of mountain troops (the latter trained in parachute jumping in 10 days) were parachuted into the northern, snow-covered mountains. A paratroop company also was dropped from *Ju 52's* at Tromsö, Norway's most northern town.

The German air transport effort during this campaign was a heavy one. More than 3,000 missions were flown—about 1,800 for personnel and 1,200 for equipment. Twenty-one infantry battalions, nine staffs and headquarters of division or regiments, mountain artillery batteries, and more than 400 tons of supplies were airlifted for the ground forces. Airlifted for the air force were 1,200 tons of gasoline, hundreds of men for antiaircraft units, airdrome control parties, and ordnance teams.

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Netherlands Operation

A month later the invasion of the Netherlands was also based in great part on air transport capabilities (Figure 2). The problem faced was a difficult one—to win a complete victory in a few days; use only a minimum of the critical air strength then being directed against the French, British, and Belgian Armies; and

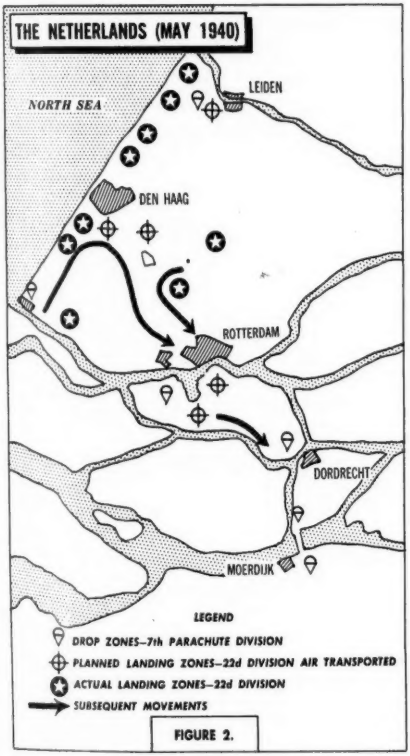

FIGURE 2.

occupy a limited land area, but one difficult to negotiate due to numerous waterways and open terrain. Also to be reckoned with were the forces of the Netherlands which at this time included four army corps of two divisions each, four strong independent brigades, and numerous other smaller units. All had the advantage of excellent defensive positions.

In order to strike a decisive blow, the German High Command decided to install—in the very heart of the Dutch system of defense—an airborne army corps consisting of the 7th and 22d Paratrooper Divisions (both specially trained for air-landed operations), and one infantry division (22 Infantry Division, *Luftlande*). The objective was, as in Norway, a double one: to seize the vital bridges at Moerdijk, Dordrecht, and Rotterdam—the mission of the paratroopers; and capture Den Haag, the capital, to take into custody the royal family and the government—the mission of the air-landed units.

The 22d Division with the 47th and 65th Infantry Regiments were instructed to land in the north in three landing zones around Den Haag, previously captured by the 1st and 2d Battalions of the 3d Parachute Infantry Regiment. The 16th Infantry Regiment was attached to the 7th Paratrooper Division to hold the bridges in the south in order to facilitate the advance of armored divisions coming from Aachen, Germany.

Surprise Is Lost

The detailed plan could not be executed on schedule. The Dutch units had been alerted, and so there was no surprise. The 47th and 65th Infantry Regiments attempted to land under fire on airstrips. Many planes burned on the ground or in the air while others crash landed throughout the countryside; in-flying serials were confused and disorganized. Only about 2,000 soldiers of the 22d Division were able to fight, and these were scattered over more than 30 miles of territory. Casualties were heavy—42 percent of the officers, 28 percent of the noncommissioned officers and soldiers, and 90 percent of the planes forming the first wave.

Den Haag could not be captured. On the night of 11 May the German High Command ordered all remnants of the division to fight to the south to link up the following day with the more successful paratroopers. This they did and on 13 May were bolstered by the 9th Panzer Division. Rotterdam capitulated on 14 May after a heavy aerial bombing.

The general historical trend is to consider the air-transported German action in the Netherlands a tactical failure. This view, however, overlooks the strategical aspects and, as a consequence, important effects of the operation do not appear. Records in the Netherlands Army Historical Office reveal that the 1st Dutch Army Corps with its two divisions, and the only reserve force of the High Command, was tied down by unexpected attacks in its rear areas throughout the campaign. Three regiments were withdrawn from main defensive positions without replacement, command organization was disrupted, national morale lowered, and swift government action impaired. Air transport once again made its value count in strategic success.

Campaign in Iraq

There is, finally, a little-known campaign where air transport also played a capital role, this time for the benefit of the British Army during its operation in Iraq in the spring of 1941 (Figure 3).

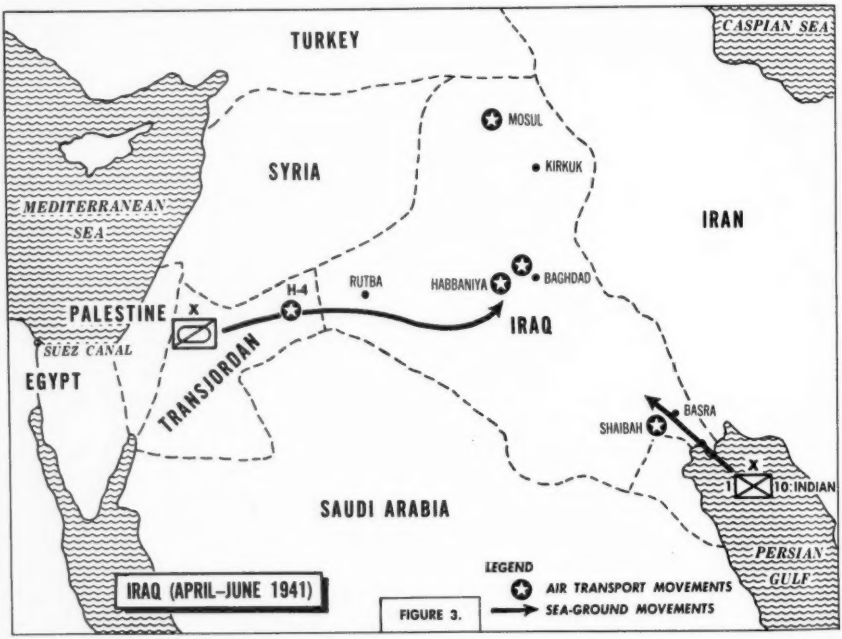

FIGURE 3.

Independent Iraq was connected to Great Britain by a treaty authorizing the latter the use of two airbases and permitting overland transit of British troops in case of war. The two airbases were Habbaniya, 60 miles southwest of Baghdad, and Shaibah, 20 miles west of

Basra. Beginning in 1940 Iraq became of vital importance to Great Britain because of ground and air routes of communications to India and the rich oil wells of Mosul and Kirkuk.

In April 1941 a pro-German government under the lead of Rashid Ali el-Gailani came to power in Baghdad. At the outbreak of war Iraq had broken diplomatic relations with Germany. Influenced by German agents, Rashid decided to forbid, if necessary by force, the passage of British troops through Iraq. At this time the Iraqi Army included four infantry divisions, two of them in Baghdad; a motorized brigade with 30 tanks and two truck-transported battalions; artillery units; and about 60 relatively recent type planes.

What were British possibilities in Iraq? The 244th Bomber Group with about 30 planes was at the Shaibah airbase; at Habbaniya was located Air Force Training School Number 4 with 80 planes, most of them obsolete, 18 older type armored cars, and a few hundred Assyrian conscripts. Air Vice Marshal H. G. Smart was in command of all these units.

An operation plan had been prepared which called for the intervention of a motorized task force moving from Palestine to aid Habbaniya and proceed into Baghdad, and the landing of an Indian brigade at Basra to protect Shaibah. The available units, however, were weak and, above all, the great ground and sea distances to be covered precluded their early commitment. Furthermore, a landing in Basra itself could be jeopardized seriously by existing Iraqi units.

Regiment Airlifted

It was this necessity to act swiftly, even with weak and insufficient forces, that led to the use of air transport to save the situation.

On 17 April, 400 officers and men of the 1st "King's Own Regiment" were transported by air from Karachi to Shaibah and went immediately into action to prepare for the arrival of the 1st Brigade, 10th Indian Division. At the end of this operation the regiment was airlifted to Habbaniya where the situation was becoming critical.

Rashid, indeed, had ordered the blocking of the British airbase by 11 battalions and 50 guns, cut the oil pipeline from Kirkuk to Haifa, and prohibited the arrival of fresh British troops. The British outpost of Rutba, in west-central Iraq, was attacked and forced to withdraw into Transjordan on "station H-4" of the pipeline—so the departure area of the Palestinian motorized brigade already was endangered.

Faced with this threat, separated by more than 300 miles of desert and marshy country from friendly, but weak forces, and surrounded by a much stronger enemy, Air Vice Marshal Smart estimated that the best defense was to attack.

Beginning 2 May the bombers and fighters of Habbaniya attacked the encircling Iraqi positions, airdromes, barracks, and roads. During the first day, flying 210 missions, 33 tons of bombs were dropped. With air-lifted infantry, forays were launched against the enemy's outposts, and his rear areas harassed by patrols. During the night of 5 May an energetic reconnaissance-in-force inflicted heavy losses to the Iraqis—500 killed, 400 prisoners, and 70 vehicles destroyed.

Although direct pressure against the British had been reduced somewhat by these offensive actions, a serious danger appeared 8 May in the form of German planes based at Mosul. Immediate defense of the Habbaniya airfield became mandatory as well as neutralization of the Iraqi Army before German intervention could grow too large. The Indian units at Basra were stopped by large inundated areas and unable to help. The Palestinian

motorized brigade by moving quickly enough could provide some support, but it had to cover more than 450 miles of desert.

Race Against Time

Again air transport provided an answer. One company of the 1st Essex Regiment was airlifted to pipeline station H-4 and linked up with a motorized troop of Transjordanian police. The race to Habbaniya began, with the motorized units making a wide flank movement to the south in order to avoid Iraqi defensive positions.

At the same time, the Habbaniya garrison was reinforced by two air-transported battalions—1st Essex coming from H-4 and the 2d battalion, 4th Gurkhas Regiment, arriving from Basra. With these troops and the linkup with the advance guard of the Palestinian brigade, an offensive on Baghdad was possible.

On 19 May the British broke through encircling forces with these columns. The attack was supported by air landing, in the enemy's rear area, a company of the 1st Essex which prevented the arrival of Iraqi reserves from Baghdad.

On 31 May Rashid fled to Iran and British troops entered Baghdad the following day. With the securing of the oil centers at Mosul and Kirkuk by a motorized task force preceded by an air-transported battalion of the 4th Gurkhas, the campaign in Iraq was won.

Speed and Dispersion

Facing an adversary superior in strength and material, and disposed over a vast area, success was achieved by the fast action possible at essential spots with minimum air-transported units. A few of the advantages of airlift in a war over great areas are apparent—reinforcement of a besieged garrison, air advance guard of a ground column, attack on rear areas, and physical occupation of an important economic region from sources at a great distance.

Close scrutiny of these three portions of military history provides a few valuable lessons:

First, and of vital importance, in a war fought over great land areas against a numerically stronger opponent, one must have air transport available for ground forces in order to intervene quickly by surprise deep inside the enemy's positions, forcing him off balance. In such circumstances a battalion air landed on a major critical point at dawn may be much more effective than a regiment arriving later by overland means.

Next, there is the wide diversity of targets and objectives suitable for air-transported action which are relative to both limited and modern total war: lines of communications, airbases, harbors, industrial areas and/or governments, command and direction agencies, and individuals.

Finally, air transport provides the commander with the ability to take the initiative of attack—from the very beginning he is in a position to deliver a deadly blow to the enemy's heart.

Conclusions

Airborne and air-transported forces are best suited to resolve decisive issues of limited wars because of their ability to cover great distances in the least time and with minimum personnel requirements.

Their efficiency can be as decisive in localized, limited fighting as in peripheral or global wars.

In future warfare, including use of atomic weapons, the dispersion of all units will be a vital necessity. Airborne and air-transported outfits, trained to fight as independent, perhaps isolated units, over large areas with swiftness and boldness will be better suited than others to wage and win a war, be it conventional, atomic, or a combination of both.

FALLOUT

Lieutenant Colonel Charles P. Bizousky, *Infantry*
Headquarters, U. S. Army Center, Fort Knox, Kentucky

IN MARCH 1954 a hydrogen or thermonuclear bomb was exploded by American authorities at Bikini Atoll in the Pacific Ocean. As a result of that explosion, "fallout" occurred over a wide area. A total area of over 7,000 square miles was contaminated to such a degree that most of the unprotected personnel would not have survived. A Japanese fishing boat, the *Fukuryu Maru*, was exposed to radioactive material from the fallout. Following is an account of the incident.

"We saw flashes of light as bright as the sun rising into the sky. . . . The glow lasted several minutes and then faded, leaving a dull red, like a piece of iron cooling in the air."

Captain Tsu Tsui stated that a fine white dust that appeared some two or three hours later fell "into my eye and it began to burn. Then ash got into my nostrils. Shortly after, I entered the engine room for my bath, I felt warmer than usual, almost as if I were glowing." Appetites were affected that night. "We were unable to eat our supper. We tried drinking some Sake to improve our appetites but that did not help." Later members of the crew complained of headaches and nausea and an itch. "The itch became unbearable and began breaking out with huge irregular blisters. They were terribly painful."

This incident and the publicity accompanying it gave the world a forceful reminder that radiological fallout produced by high-yield atomic weapons can be a hazard over large areas and for long periods of time.

The fallout from an air-burst weapon is scattered over a large part of the world in such small quantities that it is militarily insignificant. However, this is not true for a surface or underground burst. Surface and underground bursts within a few hours produce large contaminated areas dangerous to any living thing within those areas.

Formation of Fallout

When an atomic weapon is burst on or under the ground, a large amount of earth (thousands of tons) is vaporized by the intense heat, and is fused with the radioactive materials in the fireball. The fireball, together with the vaporized earth, rises high into the sky, cools as it rises, and forms the familiar mushroom cloud. As the fireball and cloud cools, the vaporized earth solidifies and begins falling back to the ground. It now contains radioactive materials which emit alpha and beta particles, and gamma rays. The heavier particles of earth fall down as the cloud rises. The lighter particles are carried downwind before they settle on the ground.

Fallout begins immediately after the burst in the area around the burst but

The US Army fallout prediction system taught at USA CGSC provides commanders with a more accurate measurement device and is a forward step in the continuing development of the Army's prediction methods

may begin as late as 24 hours after the burst at great distances downwind. As a general rule it is expected that, except for the smallest particles which fall over a very wide area, the fallout of the particles, which produce intensities of tactical significance, will form, in the course of time, an irregular cigar-shape pattern of contamination such as Figure 1.

The exact shape and dimensions will be determined by the speed and directions of all winds between the ground and the atomic cloud. A pattern such as this does not appear on the ground immediately. It grows in the downwind direction with time after burst. Each contour expands as the radioactive dust accumulates on the ground and contracts as radiological

The intensity of the fallout and the area covered depend on:

1. The type of weapon (fission, fusion, or combination) and the energy yield.

2. The position of the burst with respect to the ground.

3. The velocity and direction of the winds between the ground and the top of the atomic cloud, which may rise up to 100,000 feet depending on the yield of the weapon.

4. The composition of the surface on which the weapon is detonated (loose soil, hard rock, and water).

Figure 3 shows a plot of fallout produced by a high-yield surface burst weapon when a 15-knot (17 miles per hour) wind of constant velocity and direction

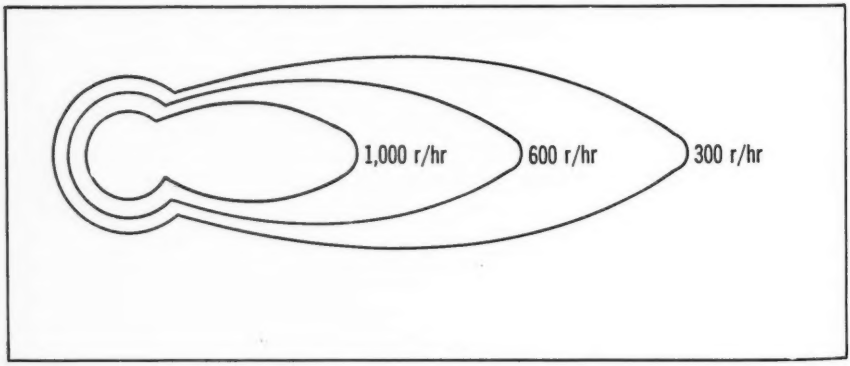

Figure 1. Generalized fallout pattern

decay becomes significant. Some indication of the manner in which the fallout pattern develops over a large area is illustrated in Figure 2.

Notice on Figure 2 that the contaminated area and intensity changes with time. Pick a point about 32 miles downwind from ground zero. Notice that at one hour after burst the intensity at that point is 30 roentgens per hour; at six hours after burst it is about 800 roentgens per hour; and at 18 hours after burst it is approximately 200 roentgens per hour.

at all altitudes is assumed. The numbered areas indicate the intensity of fallout normalized to one hour after burst. This simply means that the fallout that arrives in these areas will have this intensity one hour after burst. If it arrives before one hour, the intensity will be greater; if it arrives later than one hour, it will be less.

The time of arrival of fallout on the ground depends on the wind. Figure 4 indicates the approximate time after burst the fallout arrives on the ground (for the

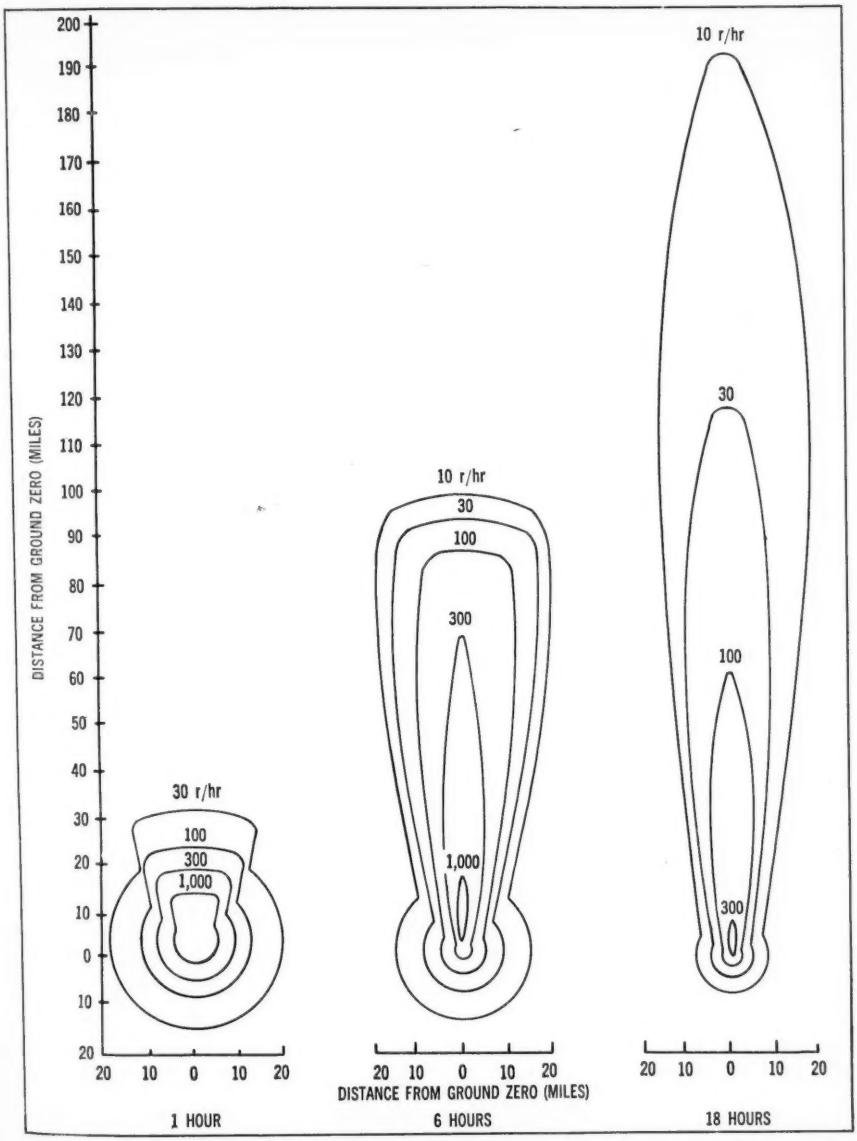

Figure 2. Dose rate contours from fallout at 1, 6, and 18 hours after a surface burst with fission yield in the megaton range (15 miles per hour effective wind)

same conditions). It also indicates the approximate intensities at different points at the time the fallout arrives.

Figure 5 indicates the total dose accumulated by personnel who are in the area at the time of burst and who remain there until 48 hours after the burst. The total dose indicated is the approximate minimum dose. Personnel will receive at least that dose.

Estimates such as Figure 5 can be of immeasurable value in planning operations of any nature.

Although the dosages received at different positions along any contour or between contours will vary, the following generalizations can be made:

1. In most of the areas outside the contours shown in Figure 5, a person can operate without protection or evacuation and not become a radiation casualty.

2. In area 4, personnel in the open for 48 hours may become radiation casualties of varying degrees of severity. However, in this area the use of foxholes for protection will prevent casualties. Personnel can be out of their foxholes for about two hours the first day, and five hours the second day without becoming casualties. Personnel entering this area later than 48 hours after the burst can operate in the open without becoming casualties.

3. In area 3, personnel can remain in the area for 48 hours if they stay in their foxholes at all times. If substantial casualties are to be prevented, these personnel must be replaced soon after 48 hours. Replacements entering the area at 48 hours after burst also must use the foxholes, but can operate outside them for several hours each day without becoming casualties.

4. In areas 1 and 2, the fallout is extremely dangerous, and large numbers of radiation casualties will result regardless of the action taken. However, prompt and proper action will reduce the number and the severity of the casualties in some parts of the area.

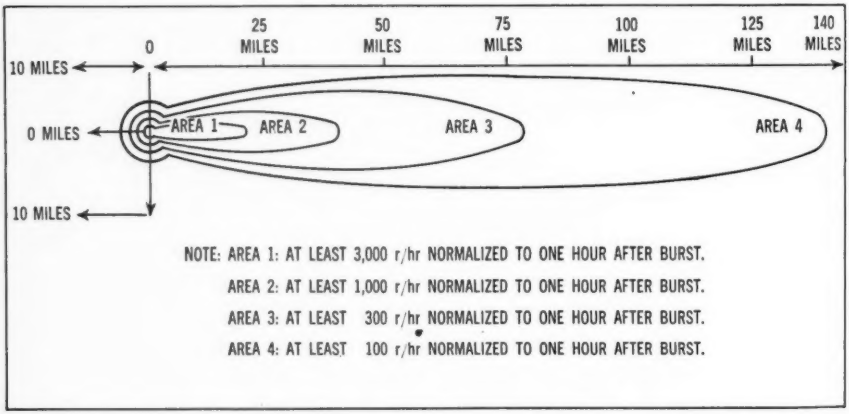
0
25 MILES
50 MILES
75 MILES
100 MILES
125 MILES
140 MILES
10 MILES
0 MILES
10 MILES
AREA 1
AREA 2
AREA 3
AREA 4
NOTE: AREA 1: AT LEAST 3,000 r/hr NORMALIZED TO ONE HOUR AFTER BURST.
AREA 2: AT LEAST 1,000 r/hr NORMALIZED TO ONE HOUR AFTER BURST.
AREA 3: AT LEAST 300 r/hr NORMALIZED TO ONE HOUR AFTER BURST.
AREA 4: AT LEAST 100 r/hr NORMALIZED TO ONE HOUR AFTER BURST.

Figure 3. Area of militarily significant fallout expected from a megaton yield weapon (wind 17 miles per hour)

Casualty Producing Effects

It is impossible to predict exactly how a given individual will respond to a specified dose of radiation. However, the average effect on a large group may be predicted with enough accuracy for oper-

ational purposes. The casualty producing effects of radioactive fallout can be classified generally as follows:

Injury from radiation originating within the human body which is a long-range hazard. The radioactive dust may enter the human body through cuts or wounds, breathing, eating foods, or drinking water. The quantities that enter the body will be small. However, even small quantities present in the body can produce considerable injury for the following reasons:

1. Radiation produced by these materials is continuous and lasts for years.

2. Vital body tissues are very near the source of the radiation.

3. Over a long period of time, more and more of the radioactive materials accumulate in the body until there is enough to produce serious injury.

Injury from radiation originating outside the human body, which is a short-range hazard and, therefore, is tactically the most important. This type radiation produces serious injury in several general ways:

1. When the radioactive dust comes in contact with the skin, radiation injury in the form of "beta burns" is produced. Personnel lying prone in a contaminated area can receive "beta burns" through their clothing.

2. Personnel in a contaminated area receive internal injury from the gamma rays which are being emitted by the radioactive dust. The gamma rays produced by the radioactive dust within about 200 yards of the individual contribute to the radiation dose received.

The effect of radiation on personnel depends on a number of factors, some of which are the amount of radiation received (total dose); time during which the radiation is received; amount of body

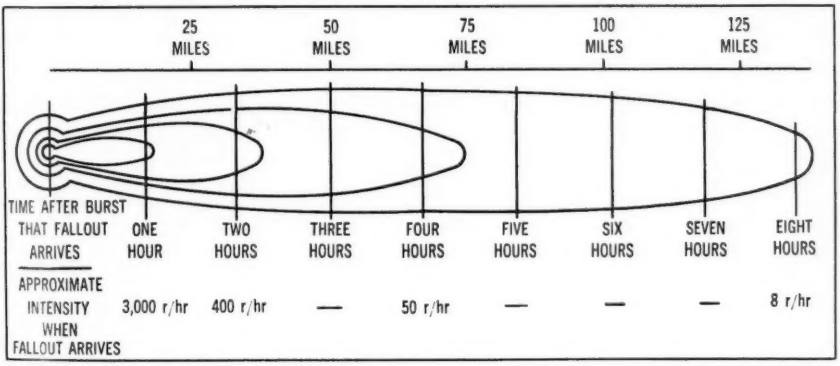

Figure 4. Arrival of peak intensities on the ground from a megaton yield weapon (wind 17 miles per hour)

recovery; and individual body variations and amount of body exposed.

The effects that can be expected from entire body radiation doses received or accumulated within about three to four days are:

1. Very large doses, 5,000 roentgens or more, result in very rapid injury to the central nervous system. There is almost immediate incapacitation and death is certain in a few hours to a week. The symptoms are lack of muscular coordination, difficulty in breathing, and intermittent stupor.

2. Doses of about 700 to 1,000 roentgens

result in severe injury to the gastrointestinal system. Death is certain in one or two weeks. Symptoms include nausea and vomiting within one to two hours, prostration, diarrhea, lack of appetite, and fever; and internal bleeding, infection, swelling of throat, and loss of hair.

The sooner these symptons develop, the sooner death is likely to result. In some cases the initial sickness disappears for a short time. However, it reappears and increases in severity until death results.

3. Doses of about 300 to 500 roentgens, from which survival is possible but not certain, produce symptoms similar to those made by larger doses. However, they appear later and are less severe. The initial sickness is followed by a latent period (several days to two weeks) during which the patient feels relatively well. After that, sickness returns, lasting until death or recovery (after three to six months). After the latent period the following symptoms appearing more pronounced are ulcers and bleeding under the skin, in the mouth, urine, intestines, and other organs; serious infection of scratches, cuts, wounds, and burns; loss of blood clotting ability; fever and delirium; and loss of hair.

4. Doses of 100 to 250 roentgens, from which survival is probable, produce symptoms which are generally like those from larger doses, except that the onset is less abrupt and less severe. There is usually some nausea, vomiting, and diarrhea on the first day. These symptoms disappear during the latent period (about two weeks). After that they appear again; however, they are not very severe. If there are no complications due to other injuries or infection, there will be recovery in nearly all cases after about two to three months.

5. Doses of 25 to 100 roentgens may produce mild and somewhat indefinite symptoms or no symptoms at all. Individuals should be able to proceed with their usual duties.

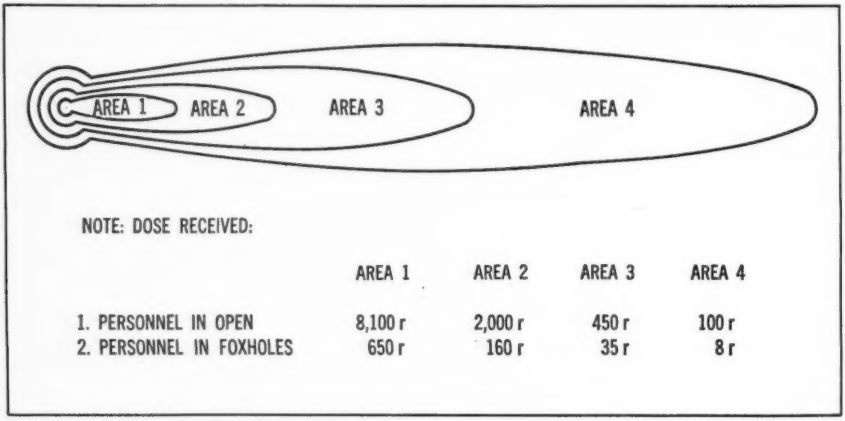
AREA 1
AREA 2
AREA 3
AREA 4
NOTE: DOSE RECEIVED:
AREA 1 AREA 2 AREA 3 AREA 4
1. PERSONNEL IN OPEN 8,100 r 2,000 r 450 r 100 r
2. PERSONNEL IN FOXHOLES 650 r 160 r 35 r 8 r

Figure 5. Total dose areas by H + 48 hours from a megaton yield weapon (wind 17 miles per hour)

Protective Measures

The casualty producing potential of fallout is based on the time fallout arrives, dose rate (either at time fallout arrives or normalized to one hour after

burst), degree of shielding or protection available to personnel in the area, time spent in the area after fallout arrives, and decay rate of the radioactive fallout.

Current Tables of Organization and Equipment show that all units of platoon size and larger will be equipped with the tactical dosimeter to indicate the total dose received. Units of company size and larger also will be equipped with the radiological survey meter to determine the dose rate and extent of contamination. These instruments are now either standard type and under procurement or are in the final stage of development. They will provide the information needed to determine when and where protection is required and the effectiveness of protective measures taken.

The greatest potential danger from fallout can be avoided by proper protection of personnel during the early hours following the arrival of fallout. The best form of protection in the field is a foxhole with cover or other underground fortification. An open foxhole will reduce the dose to about one-tenth that received by personnel in the open. A foxhole with one and one-half feet of earth cover will reduce the dose to one three-hundredths of that received in the open. Personnel in a medium tank will receive about one-fiftieth of the dose as those in the open.

The following actions, if taken, will minimize the effects of fallout on individuals and small units.

1. Dig foxholes and improve them when time permits.

2. When a warning is received or when instruments indicate that fallout has begun, all personnel enter and cover foxholes with a light cover such as a poncho or shelter half. This type cover does not reduce the dose directly, but it reduces the amount of fallout entering the foxhole and can be thrown aside when fallout stops.

3. Report the beginning and intensity of fallout to higher headquarters.

4. Keep under cover for about two hours (if mission permits).

5. When fallout stops, stay in the foxhole, brush the dust from clothing, and scrape up and throw away any dust or debris that entered the foxhole; dig deeper and pile the earth on the edge of the foxhole.

6. If it becomes necessary to cross a fallout area, cross fast in vehicles or tanks, if possible. If necessary to enter and remain, go in fast, dig fast, and keep down in the holes as much as possible.

7. Evacuate the area only if directed, and then in the manner directed. Evacuation too soon or on foot often will result in greater casualties than staying in foxholes in the fallout area.

Prediction System Requirement

It is obvious that fallout which covers such large areas has a considerable impact on military planning. Ideally, planning for a specific operation is done before an operation begins, and for a spe-

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cific nuclear detonation before that detonation occurs. It is obvious that such planning must include the consideration of fallout and must be based on predicted fallout data. There is, therefore, an operational requirement for a fallout prediction system especially for low-yield weapons which are most likely to be used tactically.

After fallout occurs the extent and intensity of fallout contamination can be determined by radiation measuring devices. In cases where time is available, plans can be made based on data obtained in this manner. However, true measurements cannot be made until fallout is complete in any given area. Militarily significant fallout is not completed for several hours to over a day after the burst, depending on the yield and distance from ground zero. The act of measuring, reporting, and consolidating the data into usable form will take several additional hours. Therefore, reliable measured data cannot be available immediately after or even shortly after the burst. During this time operations or plans can be based on predicted data only.

To be of maximum benefit in operational planning, a prediction system should answer these questions:

1. In what direction from ground zero will fallout occur?
2. Over what areas will fallout occur?
3. When will fallout arrive in these areas, and how long will it last?
4. What intensities or total doses can be expected in these areas?

The relative importance of these questions will vary depending on the situation. For instance, in the area around ground zero, fallout will occur almost immediately, and the only question of importance is the intensity or dose expected. This is also true in the downwind area where fallout arrives prior to about two to three hours after burst. The fallout here will be upon unit positions before they can be alerted, and can react to avoid the danger. This is the area of greatest significance to units such as divisions, corps, and field armies.

At greater distances, where fallout arrives about three to eight hours after the burst, the prime consideration is the time fallout will arrive. At great distances the major question is the direction from ground zero in which fallout will occur. The time available to determine the answers to these questions also is an important factor. This time also varies with distance. At points close to ground zero, very little time is available since immediate action is required. Thus only the simplest and quickest prediction system can be used. Such a system also will be the most inaccurate. At greater distances a more complex and accurate system may be used since more time may be available.

The distances involved and the time available in ground operations require that the system be quick and simple and that it provide an estimate of the relative significance of various parts of the contaminated area expected.

Prediction Systems

The techniques used by different systems of fallout prediction may be grouped into four general categories.

Probable fallout area.—This is the simplest approach in which an estimate of the probable area of fallout is made. Such features as a "hot line" (downwind axis of expected fallout pattern) and arrival time estimates may be included. An example of this type is the Air Weather Service Method used by the Federal Civil Defense Administration.

The idealized pattern.—In this approach a radioactivity pattern of typical shape is used based on a mean wind to some critical height. This method takes into account the weapon yield, fission to total

yield ratio, and height of burst. It estimates intensities or total doses. An example of this type is the Armed Forces Special Weapons Project (AFSWP) method.

Analog pattern.—The basis for this type method is a catalog containing carefully computed or observed fallout patterns, each with the appropriate yield, height of burst, and wind condition. The wind and other conditions at the time of burst are compared to the conditions in the catalog. The pattern in the catalog that was produced by the same conditions (or nearly the same) as exist at the time of burst, is used as an estimate. The Rand Corporation catalog of fallout patterns is an example of this approach.

The fallout model.—The most refined type of prediction system uses a model of radioactivity in various parts of the cloud, and various particle sizes as observed in nuclear tests. The fall rates of various size particles are estimated. These particles are tracked through the wind layers as they fall to the ground. The radioactivity on the ground from various parts of the cloud are then computed. An example of this method is the Army Signal Corps method.

The Army's requirement for a quick and simple method practically eliminates the analog pattern and fallout model methods. The Analog Pattern Catalog must contain hundreds of patterns to meet the various conditions of yield, wind, and burst height that may be encountered. This makes it bulky and requires a major research and testing effort. A reasonably complete catalog is not available to date. The fallout model method requires complex computations requiring specially trained personnel. It is considered the most accurate method but is slow and complex.

The idealized pattern and probable fallout area methods meet the requirement for being quick and simple. The idealized pattern method, because it attempts to estimate intensities or doses, tends to leave the impression of more accuracy than it actually can represent. It can however, provide an estimate of the general areas which are lethal, dangerous, or reasonably safe from a military operational point of view. It provides the information which influences decisions of commanders, but can be dangerous if users do not appreciate that the areas outlined are general guides only.

The probable fallout area method is the quickest and simplest method. Its chief disadvantage is that it outlines a huge area where fallout may occur. It does not attempt to show what part of this area may be lethal, dangerous, or reasonably safe for military operations. It, therefore, provides very little information which can influence operational decisions.

Unfortunately, none of the present systems meet the needs of the Army for a fallout prediction system. Research and development are in progress to obtain more accurate, more reliable, and simpler prediction techniques. This effort also is expected to provide test models of fallout prediction equipment capable of making more accurate fallout predictions automatically. Current research and development projects seek improved field equipment which, although not automatic, will increase the accuracy of fallout prediction. Some of this equipment already is being tested.

US Army System

Under the direction of USCONARC and supervision of the U. S. Army Command and General Staff College, a group of qualified individuals (military and civilian) in this field worked to produce a revised prediction system. In early 1958 USCONARC directed that the prediction system recommended by this group be incorporated in Army training literature

and be taught in Army service schools. Incorporation in Army training literature is being accomplished and the system known as the US Army system is taught at USA CGSC. This prediction system produces, as its end product, an area envelope which incloses the area where the fallout can be expected to be of military significance. The area inclosed by this envelope is huge—hundreds of square miles for a nominal yield weapon.

The envelope is not an intensity contour. Based on fission weapons only, the system does define the maximum extent of significant fallout without suggesting that all points within the inclosed area will sustain significant fallout. It does not attempt to outline where fallout may be lethal or dangerous. *Since the envelope incloses such a huge area and is not subdivided into areas of relative danger, this prediction system does not provide all the information necessary to influence the operational decisions of division, corps, and army commanders.*

Of the prediction systems which are quick and simple, the AFSWP system has an advantage over the US Army system because it attempts to produce the essential elements of information which influence the decisions of tactical commanders. It does this by showing estimated casualty areas and areas of relative danger. As previously mentioned, its chief and most important disadvantage is that it leaves the impression of more accuracy than actually will exist. The US Army system is believed to be more accurate because it treats rate of particle fall through the wind structure more realistically.

Conclusion

The US Army system should not be regarded as the *ultimate* system for Army use. Rather, it should be considered as a step in the continuing development of the Army's fallout prediction system. This system can be improved by developing the means by which general areas of relative importance to the division, corps, and army commanders are outlined within the envelope. It appears that the next logical step in developing this system of fallout prediction is to divide the area envelope into several parts. Figure 6 illustrates the very minimum division of the area. There could be more. With this alteration the prediction will have more influence on operational planning and command decisions than it has now.

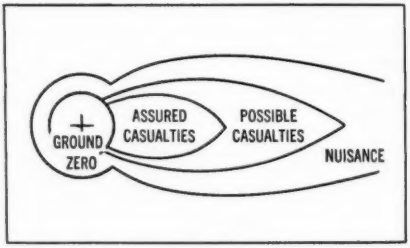


Figure 6. Zones of effect, surface burst

Correction—In the October 1958 issue of the MILITARY REVIEW, the article "Atomic Planning for Rear Areas," page 31, first paragraph, reference to Figure 9 should read Figure 10.—Editor.

UNITED STATES ARMY, ALASKA

Material for this article was furnished by Headquarters, United States Army, Alaska.—Editor.

UNITED States Army, Alaska is the major Army element of Alaskan Command. The joint command, called ALCOM, has directed the unified military operation in Alaska since 1947. Alaskan Air Command and Alaskan Sea Frontier comprise the Air Force and Navy forces under ALCOM.

The Army in Alaska is a modern, flexible fighting force organized on the new Pentomic military force concept. Equipped with many of the latest weapons, and manned by trained, cold weather seasoned troops, it is indeed a Power for Peace and a deterrent to aggression.

US Army, Alaska (USARAL) is composed of troops stationed at many points. The largest Army installation is Fort Richardson, located near Anchorage. Other posts include Fort Greely, Port of Whittier, Wildwood Station, and Army elements at Ladd and Eielson Air Force Bases near Fairbanks.

Mission

The mission of the Army in Alaska is as follows:

1. Ground and air defense of Alaska with priority to the main airbases.
2. Develop cold weather and mountain warfare doctrine.
3. Conduct Cold Weather and Mountain School.
4. Provide certain logistical support to Air Force and Navy elements in Alaska.
5. Conduct National Guard and US Army Reserve training and supervise Reserve Officers' Training Corps activities.
6. Provide for internal security to include plans for recovery from nuclear attack.

Army expansion and the construction of major bases has been consistent with the economy of defense effort and requirements of the mission. Millions of dollars have gone into the building of modern barracks, rifle ranges, administrative buildings, and recreation facilities to ensure the continued high morale and effectiveness of the men who man the guns.

Heading up the Army is Major General Gilman C. Mudgett, Commanding General, USARAL, with headquarters at Fort Richardson. Second in command is Brigadier General Thomas H. Beck who serves as

Alert to their responsibilities, troops of the United States Army on duty in the 49th State are organized into a modern, flexible fighting force prepared to meet any threat of aggression to the United States

Commanding General, Yukon Command, with headquarters at Ladd Air Force Base.

Tactical elements of the USARAL force include the 1st Battle Group, 23d Infantry, and 1st Battle Group, 9th Infantry. The battle groups are supported by artillery, tanks, engineers, and other necessary support organizations. Both infantry organizations came to Alaska as members of the 2d Infantry Division in 1956 during Operation *Gyroscope*. With the inactivation of the division in the fall of 1957, the regiments were reorganized along newly devised battle group lines in keeping with the modern Pentomic concept. They are designed for independent and sustained operation in the field.

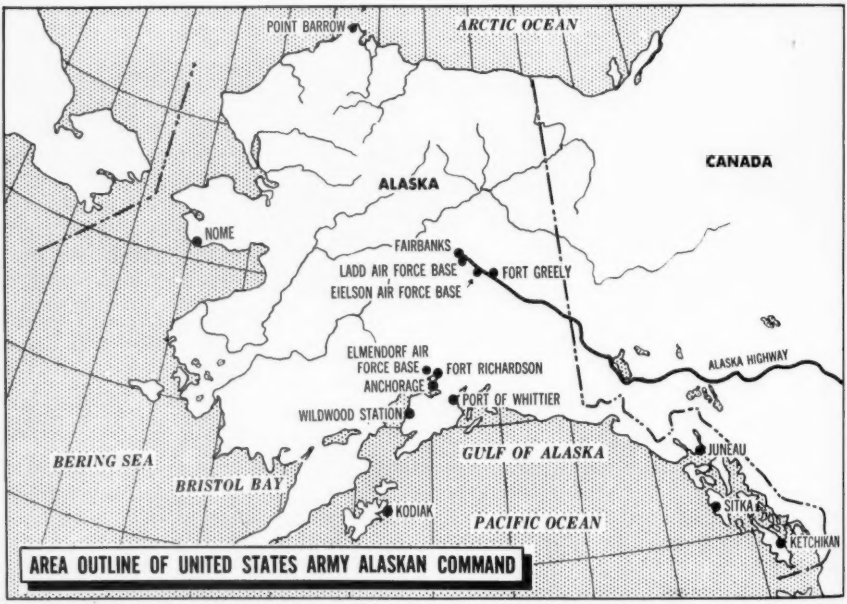
Backing up the fighting men are many repair and equipment shops and units. Chief among Alaskan depots is the U. S. Army Supply and Maintenance Center, Alaska, at Fort Richardson. Supply of common items to the Air Force is a large part of the job of this center.

The Haines Pipeline is maintained and operated by the USARAL Petroleum Distribution Center to supply troops in the field and aircraft with liquid petroleum products.

The Cold Weather and Mountain School at Fort Greely, previously located at Fort Carson, Colorado, was transferred to the northern Army post during 1957. Men attend classes from Army units all over the world, returning to their home stations to become instructors in turn and passing on the lessons learned.

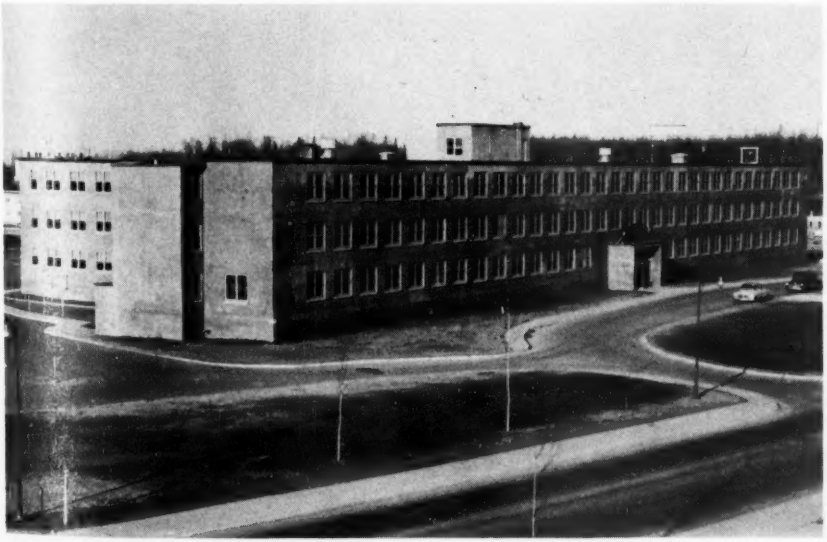
Soldiers and their dependents in Alaska comprise a large percentage of the area's population. Most of the men and their families remain for a period of three years, with some staying on as permanent residents.

Alert to its responsibilities, United States Army, Alaska stands ready today to meet any threat of aggression as indicated in the following official United States Army photographs.



AREA OUTLINE OF UNITED STATES ARMY ALASKAN COMMAND

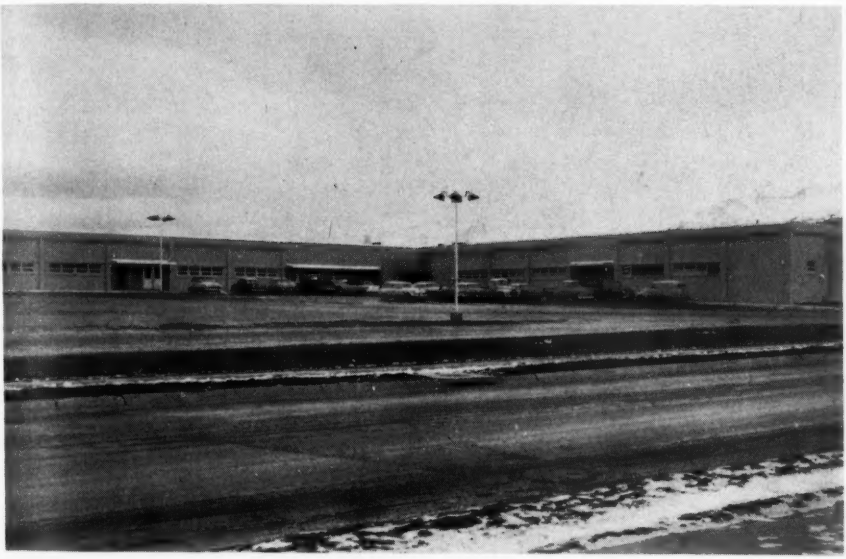
Over-all view of military installation at Port of Whittier, Alaska



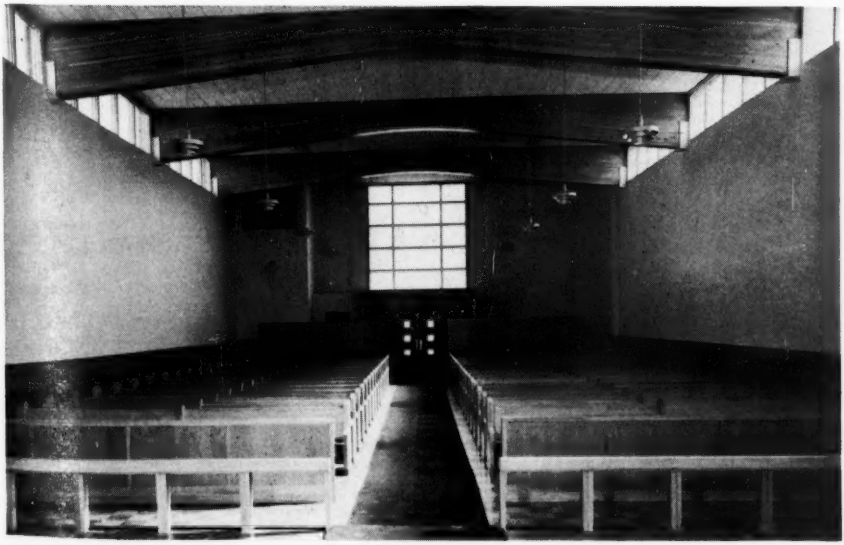
US Army, Alaska and Fort Richardson Headquarters Building

Fort Richardson Elementary School

Dispensary and Dental Clinic at Fort Richardson, Alaska



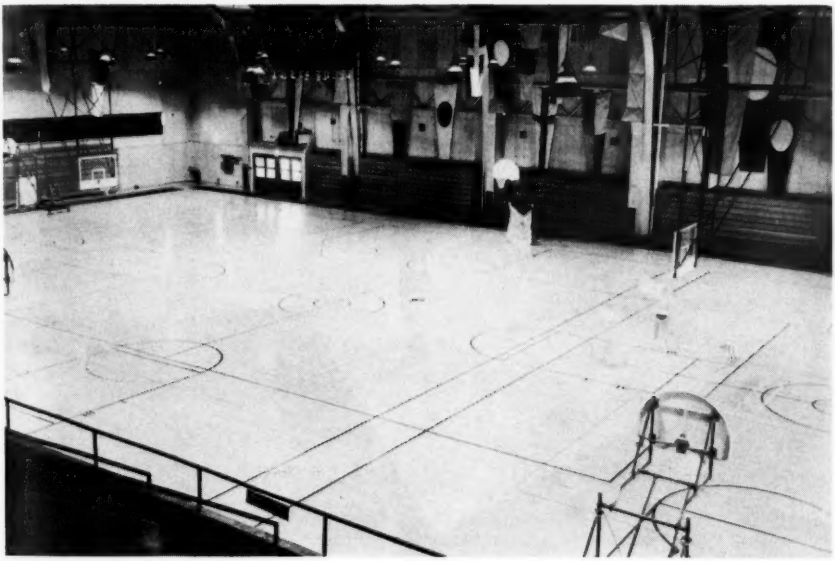
Fort Richardson Community Shopping Center



Chapel Number 1 is one of two Post Chapels on Fort Richardson

Newly completed ballroom in the Fort Richardson Noncommissioned Officers' Club

Noncommissioned Officers' Club dining room



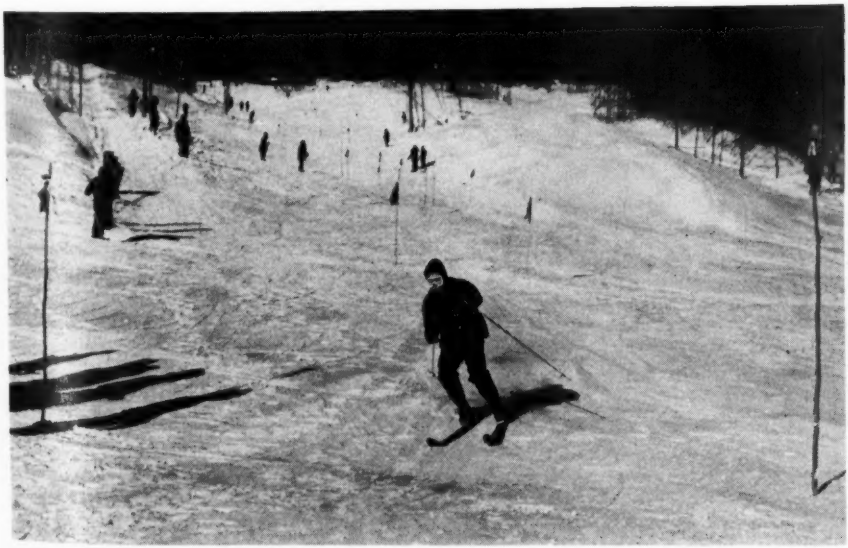
Field house facilities are available to Fort Richardson military personnel and dependents

Typical recreational type cabin which may be rented by military personnel

Major General Gilman C. Mudgett inspects 1st Battle Group, 9th Infantry

M-41 tank in operation at Fort Richardson

105-mm howitzer gun crew



Infantrymen participating in a *slalom* event at Ladd Air Force Base

Infantry squad moving out on ski patrol

Ski firing event at Fort Richardson ski course

Team from Company C, 9th Infantry, at starting point during training exercise

Practice evacuation of wounded man by helicopter

Soldier parajumping at Fort Richardson

Members of 1st Battle Group, 23d Infantry, on a field problem

Men of Company C, 23d Infantry Division, in a live fire demonstration

Tank element moving up during field problem at Fort Richardson

Tanks and infantry moving in on the enemy on the crest of a hill in an exercise

Alaska National Guard troops receiving instruction in machinegun technique

Members of Alaska National Guard inspecting bridge constructed in training exercise

Fort Greely dog sled team

PARTISAN WARFARE, MODEL 1861-65

Colonel Carl E. Grant, *Chemical Corps*
Student, US Army War College

WASHINGTON Irving once wrote: "The natural principle of war is to do the most harm to our enemy with the least harm to ourselves; and this, of course, is to be effected by stratagem."

The first major engagement of the Civil War was still a month or more in the future when certain private citizens of the Confederacy sought to interest their government in the raising of irregular or guerrilla forces to operate against Federal troops which might invade the South. Their early interest in organizing guerrilla forces is understandable since it had been evident for some time that unless the South attempted to invade the North or the Union chose to abandon the states which had seceded, the war would be fought below the Mason-Dixon line.

Any hopes which the South may have held for secession without a conflict were scotched by Lincoln's proclamation of 15 April 1861. In this pronouncement, issued two days after the surrender of Fort Sumter, the President called for 75,000 volunteer militia and stated that "the first service assigned to the forces hereby called forth will probably be to repossess the forts, places, and property which have been seized from the Union."

"Beauty and Booty"

On 5 June General Beauregard, who was then at Manassas Junction assembling the forces which would oppose the Federals in the First Battle of Bull Run, addressed the citizens of three neighboring Virginia counties in what came to be known as his "beauty and booty proclamation." Accusing Lincoln of having abandoned all moral, legal, and constitutional restraints in authorizing the invasion of southern soil, he charged that Union troops were murdering and imprisoning citizens, confiscating and destroying property, and "committing other acts of violence and outrage too shocking and revolting to humanity to be enumerated." "They proclaim by their acts," announced Beauregard, "if not on their banners, that their war cry is 'beauty and booty'." He concluded his rallying call by appealing to the local populace to exhort "every means . . . compatible with honorable warfare to drive back and expel the invaders from your land."

Despite the fact that feeling was running high in the South, the record indicates that the Confederacy was reluctant at first to sanction the organization of guerrilla forces. As early as 10 June 1861, General Lee, in replying to a letter from the commander of a Virginia regiment, stated that the arming, equipping, and payment of an independent or guerrilla force by the Confederate States was "not deemed advisable by the President."

In late July 1861 an Alabamian by the name of Campbell wrote to the Secretary of War to propose the formation of a company or companies to "proceed against the enemy in any manner that will cripple the enemy most and do our Government most service." He further suggested that

The field commander of the future may find himself confronted with area defense and security problems not unlike those posed to his Union counterparts by the hit-and-run tactics of the Confederate partisans

such companies move and fight "without restraint and under no orders and convey the property captured to their own private use." This, he pointed out, would relieve the Confederacy of the burden of sustaining or supporting such forces. Being apparently a gentlemen of foresight, Mr. Campbell climaxed his letter with the suggestion that these troops be provided with "some verbal or written assurance that our Government will not interfere with our movements or hold us accountable in after time for the part taken in the premises."

Again the War Department replied that the officers and men of all organizations in the military service of the Confederacy would be required to conform strictly to the laws and customs of civilized nations, that they must be commissioned and paid by the Government, and that they must be completely subordinated to the authority of the Government. The letter went on to say that "without this recognition of the supremacy of the civil power of the state, the Government would possess no right to interfere in your behalf if you were to fall into the hands of the enemy and be subject to all the cruelties inflicted upon alleged outlaws or pirates."

Rangers Authorized

Virginia appears to have been the first of the Southern states to grant formal recognition to independent units. On 27 March 1862 the Virginia General Assembly passed an act authorizing the organization of rangers. This decree specifically provided for the raising of "10 or more companies, and not exceeding 20, of 100 men each, to be composed exclusively of men whose homes are in the districts overrun by the public enemy, within the limits of said counties, who shall enlist for 12 months in the service of this Commonwealth to act as rangers and scouts on our exposed frontier near the lines of the enemy, and in that part of the State overrun by the armies of the enemy, with the view of cutting off their marauding and foraging parties and giving protection to the loyal citizens of the State."

The legislation also provided for the arming of such units by the State, and prescribed that the rangers and their officers would receive the same pay as the officers and private soldiers of the Confederate infantry.

The proponents of the act apparently recognized and sought to avoid or minimize the potential problems of command control and discipline inherent in such organizations by placing the rangers under the command of the governor, by specifying that their operations would be reported to him, and by requiring that whenever the rangers were operating in the neighborhood of a Confederate army, they would be subject to the orders of the Confederate commander and would cooperate with the movements of such a force when ordered to do so. The act also prescribed that the rangers' operations would conform to the rules and customs of warfare, "provided the enemy on their part shall conduct the war according to the usages of civilized war."

Less than a month later, on 21 April 1862, President Jefferson Davis approved an act passed by the Confederate Congress authorizing him "to commission such officers as he may deem proper with authority to form bands of partisan rangers, in companies, battalions, or regiments,

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Colonel Carl E. Grant was graduated from the University of Alabama in 1935, and Lafayette College in 1936. During World War II he served in North Africa and Italy. His assignments have included duty with the Chicago Chemical Procurement District; Rocky Mountain Arsenal, Denver, Colorado; Wright-Patterson Air Force Base, Dayton, Ohio; Office of the Chief Chemical Officer; and Memphis General Depot. He attended the Naval War College in 1952 and served on the faculty of the U. S. Army Command and General Staff College from November 1955 to July 1958. He now is a student at the US Army War College at Carlisle Barracks, Pennsylvania.

either as infantry or cavalry." This act placed the partisan rangers on an equal footing with other members of the Confederate Army insofar as pay, rations, quarters, and subjection to regulations were concerned. However, it held out a very substantial inducement to potential partisan recruits by providing that "for any arms and munitions of war captured from the enemy by any band of partisan rangers and delivered to any quartermaster at such place or places as may be designated by a commanding general, the rangers shall be paid their full value in such manner as the Secretary of War may prescribe."

The partisan corps authorized by these legislative actions were to make names such as Ashby, Imboden, Mosby, White, Gilmor, and McNeill familiar to many a Union commander before the end of the war.

The prospect of being able to capitalize on the spoils of war and the promise of a more adventuresome type of service than that which the average line soldier could look forward to attracted many a southerner to the ranks of the partisans—frequently at the expense of other military units which the Confederacy was trying to raise.

Within three months after the passage of the act authorizing their formation, Governor Clark of North Carolina wrote to the Secretary of War protesting that the raising of the large number of partisan rangers authorized by the War Department was interfering seriously with the enrollment of conscripts in his state. Commenting upon one of the more obvious advantages of the partisan service, the Governor pointed out that "the idea of being mounted is agreeable to the habits of our people and has attractions which will carry every one into the cavalry that will be allowed to join either cavalry or rangers, to the great detriment of the infantry."

He went on to claim that it was only because of his refusal to accept cavalry and artillery units that North Carolina had been unable to place five regiments of infantry in the field. Although his reply to Governor Clark's letter contended that the number of authorized partisan units was not large and attributed the Governor's recruiting difficulties to the enlistment of companies of partisan rangers by persons without authority to do so, the Secretary of War did recognize the existence and seriousness of the problem. In a report submitted to Jefferson Davis under date of 12 August 1862, Secretary Randolph pointed out that it had been recognized that the novelty of these organizations and their "supposed freedom from control" would attract large numbers of men to the partisan corps. This realization, he said, had prompted the War Department to require a recommendation from the general commanding a military department prior to granting authority for partisan forces to be raised in that particular area.

Line Transfers Prohibited

The attractions of the partisan service appear to have proved equally appealing to many who were already serving in the ranks; so much so, in fact, that the Confederate military authorities soon found it necessary to prohibit transfers from the line to the partisan rangers.

By mid-September 1862 the records of the Adjutant and Inspector General's Office in Richmond indicated that partisan rangers had been organized in Alabama, Georgia, Louisiana, North Carolina, South Carolina, and Virginia, and were formed at that time into six regiments and nine battalions. Partisan units of company size also had been organized by this time in Florida and Mississippi.

Other Problems

Unfavorable effect upon the operation of the conscription act was not the only problem which the partisan rangers posed

to the Confederate authorities. On 2 April 1862—only six days after the passage of the act authorizing the organization of ranger companies in Virginia—Brigadier General Henry Heth, commanding the District of Lewisburg (in what is now West Virginia), wrote Governor Letcher to say that he felt that only one side of the picture had been presented up to that time.

According to Heth, the ranger companies he had observed were no better than "organized bands of robbers and plunderers." He accused them of "stealing the thunder of and basing their claims to organization upon the meritorious and daring acts of a few brave men," and of being "more ready to plunder friends than foes." He rounded out his description of local ranger units by saying: "They do as they please—go where they please. The effects of this organization upon the volunteering has been very injurious. Many, especially the worthless, like the privilege of fighting, as they say, on their own responsibility, which interpreted, means roaming over the country, taking what they want, and doing nothing."

Heth declared that a guerrilla leader should be capable of enforcing discipline and of commanding the respect of his associates—attributes which he credited to neither of the two ranger commanders operating in his area—and stated that he was seriously considering disarming the two companies they commanded "simply as an act of protection to the good citizens of this county." Governor Letcher referred Heth's letter to General Lee "for his consideration and advice."

Two days following the dispatch of his first letter, General Heth wrote again to the Virginia governor—this time inclosing a letter written by the Commonwealth's attorney of Pocahontas County on behalf of a committee of citizens from that area. The attorney had harsh words for the rangers. "Springing full armed into existence (not from the brain of a heathen goddess but from hasty legislation)," he wrote, "the rangers are a terror to the loyal and true everywhere, and cannot whilst engaged in the murder of our citizens and the stealing of their property be of any service to Virginia or her cause." He contended that since the militia of the county had been called out, the "wives and daughters and property of the men of Pocahontas" had been "left to the mercy of the enemy and the rangers." He demanded that the militia be disbanded and returned home to defend their families and property against "these lawless bandits" unless the rangers could be brought into subjection to the authority and laws of the state.

As an alternative the barrister proposed that the rangers "be disarmed and sent back to Yankeedom and good men placed in possession of their guns to dispatch them on their returning raids." The Commonwealth attorney's letter bore the following postscript: "Of course I do not mean to say that there are not some good men belonging to the rangers, but neither officers nor the good have power over the vicious and the bad, and the last are daily absorbing the first. A good man and loyal citizen has no more business with them than with the inmates of the penitentiary at Richmond." That one individual had changed his views toward the value and usefulness of partisan forces is unmistakably clear, for the Commonwealth's attorney was the same William Skeen who had written to the Secretary of War some 10 months before requesting authority to enlist 10 companies of men for guerrilla service in the northwestern part of Virginia.

Licensed Robbers

Echoes of concern over the activities of the partisan rangers were being heard elsewhere in the South. In a letter to Jefferson Davis on 30 June 1862, Major General M. J. Thompson of the Missouri State Guard (then on special service with the Confederate States Army in Mississippi) stated that he felt compelled to draw the

President's attention "to a few facts in regard to the partisan rangers." Thompson based his remarks upon his experiences in Missouri during the preceding summer when conditions, as he put it, "made nearly all of our proceedings tincture of the partisan ranger, for we had to rob both friend and foe."

Commenting upon the requirement for exceptional leadership in partisan organizations, Thompson explained that although the majority of the officers who had been authorized to raise partisan units understood and appreciated "the true object of the act of Congress," he was convinced that a portion of these officers and the population at large were not of the same mind. The individuals most anxious to join the partisans, he said, were those who had been "induced to believe that they are to be a band of licensed robbers, and are not the men to care whether it be friend or foe they rob."

He contended that these circumstances, which had cost the Confederacy many friends and had irritated many "lukewarm Union men" in Missouri, were now beginning to be felt in Tennessee and Mississippi, and urged that immediate steps be taken "to define clearly the extent of their privileges" and to correct the general impression that partisan units were "intended for detached service entirely, and will be allowed to roam and do as they please."

In a report submitted to President Davis on 3 January 1863, James A. Seddon, who had succeeded Randolph as Secretary of War, observed that the policy of organizing corps of partisan rangers had not been approved by the experience gained in the war up to that time. In his words:

The permanency of their engagements and their consequent inability to disband and reassemble at call precludes their usefulness as mere guerrillas, while the comparative independence of their military relations and the peculiar awards allowed them for captures induce much license and many irregularities. They have not infrequently excited more odium and done more damage with friends than enemies.

The report went on to say that the men composing the partisan organizations could be utilized to better advantage in regular units, and that although the War Department had been reluctant to disband the partisans, it had likewise avoided the raising of additional units of this type and was then engaged in a program to encourage the conversion of existing partisan corps into line units in the Provisional Army.

A certain amount of flexibility must have been embodied in the department's stated policy to avoid the organization of additional partisan units, since the record indicates that approximately two weeks later the Adjutant and Inspector General's Office issued Special Orders Number 13 authorizing one Major M. J. Wicks "to raise an independent battalion of partisan rangers, to be composed of men drawn from within the enemy's lines, for special service on and near the Mississippi River, under the call of the President and the existing law."

Maximum Punishment

If the irregulars were a headache to the Confederate government at times, they were a source of no lesser annoyance to the Union. As early in the war as June 1861 General McClellan, who had been placed in command of the Department of the Ohio, found it necessary to issue a proclamation "to the inhabitants of Western Virginia." Regretting that the Confederacy had seen fit to "pursue a guerrilla warfare" and "carry on a system of hostilities prohibited by the laws of war among belligerent nations," McClellan served notice that "individuals or parties engaged in this species of warfare—irregular in every view which can be taken of it . . . will be dealt with in their per-

sons and property according to the severest rules of military law."

On 22 December of that year, General Halleck, then commanding the Department of the Missouri (which embraced the states of Missouri, Iowa, Minnesota, Wisconsin, Illinois, Arkansas, and western Kentucky), issued a general order establishing the death penalty for all "insurgent rebels" apprehended in the act of destroying railroads, bridges, and telegraph lines. The order promised the same punishment to persons accused of such crimes if they were found guilty by a military commission, and stated that the towns and counties in which public property was destroyed would be required to bear the expenses of repairing the damage "unless it can be shown that the people of such towns or counties could not have prevented it on account of the superior force of the enemy."

Similar pronouncements were being made by Union authorities in other areas. On 7 April 1862 Major General Fremont, commanding the Mountain District with headquarters at Wheeling, directed the commanders of posts and all troop units "to use their utmost exertions to destroy the various bands of guerrillas now beginning to infest the department." By July Generals Grant and Dodge were issuing orders aimed at putting down guerrilla activities in Tennessee.

Grant decreed that whenever a loss was sustained by the Federal government as a result of the system of guerrilla warfare "authorized by the Confederacy" a sufficient amount of personal property would be seized "from Southern sympathizers in the immediate vicinity to compensate the government for all losses and the expense of collection." He further announced that "persons acting as guerrillas without organization and without uniform to distinguish them from private citizens are not entitled to the treatment of prisoners of war when caught, and will not receive such treatment."

Dodge referred to the activities of guerrilla forces as "a species of warfare unknown to the laws and customs of war, and forewarned the citizenry that their failure to report immediately the known presence of guerrillas to the nearest military post would subject their property to confiscation by the Federal forces. In the event that Union pickets were fired upon by guerrillas, the order directed that Southern sympathizers "being near the place will be arrested and held until the guilty party is brought to light," and that the infliction of bodily harm upon a picket would result in a fine, not to exceed $10,000, being assessed upon "the disloyal citizens living near the place."

During this same month Brigadier General Steinwehr, commanding one of Pope's brigades in the Army of Virginia, ordered the arrest of five prominent citizens of Page County, Virginia. They were to be held as hostages under penalty of execution in the event that any of Steinwehr's troops were attacked by "bushwhackers" —a term which the Confederate authorities chose to interpret as referring to "citizens of this Confederacy who have taken up arms to defend their homes and families." Jefferson Davis denounced this action and retaliated by directing General Lee to inform the Union commander in chief that Pope, Steinwehr, and all the commissioned officers serving under their respective commands were "specifically declared not entitled to be considered as soldiers" and were, therefore, not entitled to be considered as prisoners of war and eligible for parole in the event of their capture. This situation obtained for a period of approximately two months. The official records of the war include a letter written by Secretary of War Randolph on 9 October in which the statement was made that "General Pope's officers have been exchanged, the United States Government having given assurance that his obnoxious orders were no longer in force."

Status Is Issue

The summer of 1862 marked the start of a movement to establish the status of guerrilla forces with respect to the laws and customs of war. In early August of that year General Halleck (whom Lincoln had recalled from the field the month before to assume the office and title of general in chief) wrote a letter to Dr. Francis Lieber, a former professor of history and political economy at South Carolina College. Dr. Lieber was then occupying a similar position at Columbia College in New York City and also was professor of political science in the Columbia law school. Halleck's letter took note of Dr. Lieber's reputation as a student of the usages and customs of war and requested that Lieber make public his views on the subject of guerrilla warfare.

As Halleck explained it, the problem then confronting the War Department stemmed from the Confederates' contention that they held "the right to send men, in the garb of peaceful citizens, to waylay and attack our troops, to burn bridges and houses, and to destroy property and persons within our lines." Furthermore, said Halleck, "they demand that such persons be treated as ordinary belligerents, and that when captured they have extended to them the same rights as other prisoners of war; they also threaten that if such persons be punished as marauders and spies they will retaliate by executing our prisoners of war in their possession."

Lieber's reply to Halleck's request was published under the title of *Guerrilla Parties Considered With Reference to the Laws and Usages of War*. In his treatise Dr. Lieber recognized the fact that the legal and military status of "armed parties loosely attached to the main body of the army, or altogether unconnected with it" rarely had been taken up by writers on the laws of war; that the term guerrilla often was used inaccurately; and that its application during the war then in progress had been particularly confusing.

Lieber pointed out that guerrillas were then being generally looked upon in this country as bands of armed men engaged in conducting irregular warfare either because of their irregular origin, that is, self-constituted or constituted by the call of a single individual outside the general law of levy, conscription, or volunteering; because of their disconnection with the army as to movements, pay, and provisioning; or because of the nonpermanency of their organizations which could be disbanded and reassembled at will.

Partisan corps, on the other hand, were described by Lieber as organizations which sought to injure the enemy by action separate from that of their own main army, and by operating in the rear of, on the flanks of the enemy, and against his lines of communication. A partisan, in Lieber's opinion, was "part and parcel of the army, and, as such, considered entitled to the privileges of the law of war, so long as he does not transgress it." It is interesting to note that Lieber's paper made reference to *International Law, or Rules Regulating the Intercourse of States in Peace and War* which Halleck had published just the year before.

Lieber stated that the majority of the writers on the subject of international law were agreed that a people acting to repel an invasion were entitled to the full benefits of the laws of war and that an invader would be obliged to treat armed citizens who might be captured as prisoners of war, provided they opposed the invader openly and in respectable numbers and operated in the yet uninvaded or unconquered portions of the hostile country. He concluded his remarks with the following observation:

So much is certain, that no army, no society engaged in war, any more than a society at peace, can allow unpunished assassination, robbery, and devastation with-

out the deepest injury to itself and disastrous consequences which might change the very issue of the war.

Prisoner Exchange

Meanwhile, Major General Dix and Major General D. H. Hill, as authorized representatives of the Federal and Confederate governments respectively, were negotiating for a general exchange of prisoners. The articles of agreement to govern this exchange were signed by Dix and Hill on 22 July 1862 and were published 25 September in General Orders Number 142.

Although the cartel provided "that all prisoners of whatever arm or service, are to be exchanged or paroled in 10 days from the time of their capture, if it is practicable to transfer them to their own lines in that time; if not, as soon thereafter as practicable," the status of the partisan rangers again became a point of issue and one which was to generate a considerable volume of correspondence between authorities on both sides.

In October of that year Mr. Robert Ould, who had been designated to represent the Confederate States in carrying out the exchange of prisoners, wrote to Lieutenant Colonel W. H. Ludlow, the Union agent for exchange, protesting the detention and confinement by the United States of several commissioned and enlisted personnel from partisan units. Ould argued that "partisan rangers are not persons making war without authority, but are in all respects like the rest of the Army except that they are not brigaded and act generally on detached service. They are not irregulars who go and come at pleasure, but are organized troops whose muster rolls are returned and whose officers are commissioned as in other branches of the service. They are subject to the Articles of War and Army Regulations and are held responsible for violation of the usages of war in like manner with regular troops. So also is it with the partisan rangers authorized under the law of Virginia." For these reasons, he stated, the Confederate government contended that partisans, including the Virginia rangers, should be treated as ordinary prisoners of war and exchanged under the terms of the cartel.

Availing himself of the niceties which governed the formal correspondence of that era—even between belligerents—Mr. Ould concluded his letter with the request that Colonel Ludlow forward the letter or a copy of it to General Thomas, the Adjutant General of the United States Army. Wrote Mr. Ould, "I have been much too hurried to prepare a copy for him."

Almost coincident with Ould's letter to Ludlow, General Lee notified Secretary Randolph that prisoners taken by Colonel Imboden's Virginia partisan rangers were being detained in Richmond instead of being paroled inasmuch as the Federals were holding some of Imboden's men as prisoners and had indicated a refusal to parole soldiers belonging to partisan corps.

Lee concluded his letter with the remark that the Union prisoners in question "had better be retained until the determination of the enemy in this regard is definitely ascertained." In passing Lee's letter along to Mr. Ould, the Secretary directed him to "inform the agent of the United States that prisoners taken by our partisan corps will not be exchanged until the enemy consents to exchange such of the partisans as fall into their hands."

On 20 November Colonel Ludlow informed Ould that orders had been issued to send all prisoners from irregular organizations who were being held by Union forces in the western theater of operations to Vicksburg (one of the designated exchange points) for delivery to the Confederate authorities. A circular published by Headquarters, Department of Virginia, over Ludlow's name on that same date announced that "the body of Confederate troops known by the designation of partisan rangers and whose officers are com-

missioned by the Confederate government and who are regularly in the service of the Confederate States are to be exchanged when captured."

Bickering Continues

The publication of this circular, despite its simple and straightforward language, did not put an end to the bickering between the North and the South insofar as the status of partisans and their right to exchange were concerned. In late November Ould again wrote to Ludlow complaining that partisan rangers were being held in New Orleans by Federal troops under General Butler on the pretext that they were, in fact, guerrillas and not in the service of the Confederacy. A few weeks later General Pemberton, who was opposing Grant's forces in Mississippi, protested to General Grant that several officers and enlisted personnel "belonging to Partisan Ranger Corps, Confederate States Army" had been refused the right of exchange by their Union captors.

Grant replied that although these roving bands had constituted "a pest to the communities through which they passed," they had posed "no detriment to the cause of the Union." "They have not observed the rules of civilized warfare," wrote Grant, "and I did not suppose were under any control except such as they agreed upon among themselves. As you acknowledge them, however, and as most of their belligerency is directed against sympathizers and abettors of this rebellion I will send them to Vicksburg for exchange or set them free."

An exchange of official correspondence in December of the same year between the commander of the Department of the Cumberland, Major General Rosecrans, and General Braxton Bragg, commanding the Confederacy's Army of the Tennessee, clearly emphasized the basic point of contention and disagreement between the two governments and their military commanders—namely, the line of demarcation between partisan operations and guerrilla warfare.

The instructions published by the Union commanders decreed that "those persons who act in the double character of citizens and belligerents, or who, affecting to belong to regular partisans, are nevertheless removed from the reach of all proper military control, are, by the law of nations, pirates and robbers." Describing such individuals as outlaws and the common enemies of both government and mankind, Rosecrans' order stated that "they are entitled to no rights but such as may be claimed by pirates and robbers, and can ask for none other at our hands."

The Confederate order, in line with the pattern established earlier in the year in the instance of Generals Pope and Steinwehr, stated that two officers of an Illinois regiment, by virtue of their engagement in activities which were "contrary to the rules and practice of civilized warfare," were declared "no longer entitled to be regarded as soldiers"; that they had forfeited all right to exchange as prisoners of war; and that, if captured, they would be held in close confinement and "treated as felons, unless otherwise ordered by the President of the Confederate States." The scope of this ultimatum was widened considerably by the next paragraph of the order which decreed that these same provisions would apply equally to "any other officers of the Federal Army in the State of Tennessee upon proof of their guilt deemed satisfactory by the commanding officer of the department in which they may be captured and held."

Guerrillas Condemned

In a letter to Bragg, dated 4 December, Rosecrans protested the policy thus established by the Confederacy as being "inhuman and barbarous." He argued that the accusations made against the officers in question had never been referred to their superiors, and that it appeared highly probable that the complaints against them

had been made by persons who had been following "the savage and disgraceful system of guerrilla warfare."

In commenting upon Rosecrans' reference to the system of guerrilla warfare resorted to by the Confederates, Bragg wrote that guerrilla warfare "should be regarded as too abhorrent to the advanced civilization of our times to receive the countenance of either belligerent," and added that he concurred wholeheartedly in Rosecrans' general condemnation of such a system of warfare. "But," continued Bragg, "if in your allusion you design to animadvert upon the exploits of the Confederate cavalry as belonging to the system [of guerrilla warfare], I protest against such a construction. All the cavalry in the Confederate service are regularly enlisted and organized bodies of men, with duly commissioned officers, responsible to their superiors and acting under orders issued to them as to infantry, and are in no respect entitled to be classed as guerrillas."

Bragg's letter went on to point out that the Confederate tactic of employing cavalry in small parties was one which had been "determined wholly by choice," and one which was "equally open to Federal authorities for their adoption." Bragg further contended that "the operations of these small bodies [of cavalry], generally far removed from the base of our heavier movements, their intrepidity in destroying the communication, trains . . . of the enemy, certainly cannot invest them with the character of guerrillas, and as they direct their efforts against the armed forces, and not against noncombatants, it is difficult to understand why they have ever been stigmatized as such."

Two days later Rosecrans replied that he was gratified to learn of Bragg's concurrence in the propriety of not molesting noncombatants or other persons because of their sentiments, as well as in the condemnation of guerrilla warfare. On the subject of the Confederate cavalry, Rosecrans had this to say: "We do not consider your regularly organized cavalry as guerrillas, but those who live and dress as citizens and act in the double capacity of citizens and soldiers or scouts are so regarded and will be so treated." As a partial solution to the problem of identification and recognition and a means of preventing "mistakes otherwise unavoidable," Rosecrans suggested that it was "highly desirable" that such troops "should at once be required to wear some badge to distinguish them from citizens."

Bragg's reply reiterated his concurrence in Rosecrans' opinion "as to the barbarity of a system of guerrilla warfare," but protested the label of guerrillas being affixed by the Union to troops claiming to be Confederate soldiers upon "mere technical pretexts, such as being found in small squads or un-uniformed." He pointed out that a defensive war naturally is accompanied by less formality than an offensive one. It was this circumstance, he said, which fostered the policy for the use of mounted troops which the South had found so advantageous and would continue to pursue "without being deterred in the least by the ill-grounded charges of improper warfare."

Bragg's letter of 15 December ended on this note:

As to your suggestions that our troops should be more particularly distinguished from citizens by a well-defined uniform, I will merely state that we aim to clothe them as uniformly as the exigencies of our situation will admit. Whenever you will afford us the facilities to obtain the requisite material, we shall be most happy to make the desired change. In the meantime we shall use the best to be procured.

In late February 1863 the Virginia General Assembly passed an act transferring its State troops, including the partisan rangers, to the Confederate government. This transfer appears to have been more theoretical than actual, for in forwarding

a copy of the legislation to Secretary of War Seddon on 19 March, the Virginia governor noted: "I regret to say that the forces have gone home and I will not have more than 100 or 200 men to transfer."

Mosby Gets Rangers

In March 1863 President Davis appointed Mosby captain of partisan rangers in the Provisional Army. In forwarding the appointing order, Lee's adjutant general conveyed the instructions that Mosby's company was to be organized "with the understanding that it is to be placed on a footing with all troops of the line, and to be mustered unconditionally into the Confederate service for and during the war." It is noteworthy that "Jeb" Stuart, next in the chain of command, forwarded these documents to Mosby together with a strong recommendation that he avoid the use of the designation "partisan rangers," a term, which in Stuart's words, was "in bad repute." His letter suggested instead that the unit be called "Mosby's Regulars" to give it "a tone of meaning and solid worth." Mosby chose to ignore Stuart's advice on this score and wrote him from Middleburg, Virginia, on 16 March that "public sentiment seems now entirely changed, and I think it is the universal desire here for me to remain."

In line with its stated policy of converting the partisans into line units, the the War Department in Richmond published a general order in June 1863 which authorized the commanders of the departments in which partisan rangers were serving "to combine them into battalions and regiments with the view to bringing them under the same regulations as other soldiers in reference to their discipline, position, and movements."

The spring of that year also marked the issuance by the War Department of a document entitled *Instructions for the Government of the Armies of the United States in the Field.* Published in War Department General Orders Number 100 on 24 April 1863, these directions constituted the first comprehensive codification of the laws of war. The basic document was drawn up by Dr. Francis Lieber, revised by a board of officers, and was approved by President Lincoln prior to its issuance to the field. At the request of the Secretary of War, Lieber had set out to prepare a code of instruction which, while conforming to the existing usages of land warfare, would embody such modifications as were required to adapt them to the peculiar circumstances of the war then in progress.

This time, as opposed to the preceding year when Dr. Lieber's views on the subject had been expressed to General Halleck as a personal opinion, the recognition of partisans as legitimate soldiers bore the approval of both the War Department and the Chief Executive of the United States. The historical importance of this code of instruction is evidenced by the fact that it remained in force until the eve of World War I when it was superseded in 1914 by the *Rules of Land Warfare.*

The end of 1863 found the partisan rangers again under criticism by the Secretary of War. In reporting the military operations of the preceding year to Jefferson Davis on 26 November, Secretary Seddon observed that "the advantages anticipated from the allowance of corps of partisan rangers, with peculiar privileges of prize to stimulate their zeal and activity, have been very partially realized, while from their independent organization and the facilities and temptations thereby afforded to license and depredations, grave mischiefs have resulted."

He concluded that the partisans should either be "merged in the troops of the line or disbanded and conscribed." "To preserve the few that are valuable coadjutors to the general service," said the Secretary, "discretion may be intrusted to the Department."

Plunder and Terror

A little more than a month later the question of the efficiency and usefulness of irregular troops was again brought to General Lee's attention; this time by Thomas L. Rosser, the general officer commanding the Valley District in Virginia. By letter dated 11 January 1864, Rosser described the partisans in his area as constituting "a terror to the citizens and an injury to the cause." The partisans, he said, "sleep in houses and turn out in the cold only when it is announced by their chief that they are to go upon a plundering expedition." Having seen "these men living at their ease and enjoying the comforts of home, allowed to possess all that they capture, and their duties mere pastime pleasures" compared with those performed by the regular troops, Rosser observed that it was only natural that men should be attracted to such service.

In Rosser's opinion this situation could be rectified only "by placing all men on the same footing who are of the same rank." Rosser was something less than charitable in his remarks concerning the fighting qualities of the partisans. Although he described Mosby as a gallant and respected officer, he stated that this latter gentleman was performing an "inestimable service to the Yankee Army in keeping their men from straggling."

It has been stated that Rosser had had several disagreements with the partisan leaders operating in his area, and that his action was prompted by a desire to discredit the partisans rather than, as his letter said, "by no other feeling than a desire to serve my country."

Regardless of whether Rosser may or may not have had a personal ax to grind, "Jeb" Stuart forwarded the letter to Lee with the statement that "such organizations, as a rule, are detrimental to the best interests of the army at large." However, his comments with respect to Mosby were more complimentary than those of Rosser. "Major Mosby's command," wrote Stuart, "is the only efficient band of rangers I know of, and he usually operates with only one-fourth of his normal strength." General Lee's forwarding indorsement to the War Department backed up Rosser's allegations and included the recommendation that the law authorizing partisan corps be abolished.

By the end of January the matter had been referred to the Confederate Congress and on 17 February 1864 the act of April 1862 which had authorized the formation of partisan units was repealed. However, in taking this action the Congress included the provision that "organizations of partisan rangers acting as regular cavalry at the passage of this act shall be continued in their present organization: Provided they shall hereafter be considered as regular cavalry and not as partisan rangers."

All bands of partisan rangers organized under the Act of 1862 were henceforth to be "united with other organizations" or formed into battalions and regiments for the purpose of "bringing them under the general conditions of the Provisional Army as to discipline, control, and movements." Apparently mindful of the advantages which might accrue from leaving the legal gate somewhat ajar, the Southern legislators authorized the Secretary of War "if he deems proper, for a time or permanently, to except from the operations of this act such [partisan] companies as are now serving within the lines of the enemy, and under such conditions as he may prescribe."

Partisan Forces Cut

On 1 April Lee informed the Adjutant and Inspector General's Office in Richmond that the partisan ranger organizations then serving with the Army of Northern Virginia included two regiments, three battalions, and two companies. He pointed out that the two regiments already were serving as regular cavalry, and that he was endeavoring to have Mos-

by's battalion mustered into the regular service. Failing this, he wrote, he would recommend that Mosby's organization be retained as partisans for the time being in view of the fact that Mosby had "done excellent service" and was reputed to be "strict in discipline and a protection to the country in which he operates." Lee further recommended that the remaining two battalions and two companies serving with his army be disbanded at once. Lee continued:

Experience has convinced me that it is almost impossible, under the best officers even, to have discipline in these bands of partisan rangers, or to prevent them from becoming an injury instead of a benefit to the service, and even where this is accomplished, the system gives license to many deserters and marauders, who assume to belong to these authorized companies and commit depredations on friend and foe alike.

The record indicates that following his review of Lee's letter, the Secretary of War informed The Adjutant General that he preferred to have both Mosby's battalion and McNeill's company retained as partisan rangers.

While the Confederacy was taking steps to reduce the number of independent partisan units it had in the field, the Union authorities continued to invoke measures aimed at making the countryside untenable for them. In January 1864 Sherman instructed one of his subordinate commanders in the Department of the Tennessee to "punish the country well for permitting the guerrillas among them" and to "take freely the horses, mules, cattle . . . of the hostile or indifferent inhabitants." During the same month Thomas in Chattanooga gave the citizens living within a 10-mile radius of the place where three Federal soldiers allegedly had been murdered by guerrillas the period of one week in which to "make up the sum of $30,000 to be divided among the families who were dependent upon the murdered men for support."

In the eastern theater Grant began to take a harsher view of guerrilla activities and, in August 1864 instructed Sheridan to hang Mosby's men without trial in the event of their capture. Custer was generally blamed at the time for the execution of six of Mosby's Rangers at Front Royal in September, and an equivalent number of Union prisoners who were executed by Mosby in a "measure for measure" reprisal some two months later were all from Custer's command. Homesteads were put to the torch in retaliation for guerrilla attacks made upon Federal troops and the Army of the Shenandoah continued its systematic destruction of farm buildings, implements, crops, and livestock in the valley. By the end of 1864 the devastation was so complete that Sheridan is said to have remarked: "The crow that flies over the Valley of Virginia must henceforth carry his rations with him."

In late January 1865 General Jubal Early sought Lee's assistance in getting the Secretary of War "to revoke the exemption granted McNeill's company from the operation of the act abolishing partisan rangers." Although his action obviously was prompted by the refusal of McNeill's men to acknowledge the authority of Gilmor (whom Early had sent to take charge of them), Early concluded his letter with a verbal blast at the partisan service in general. "The fact is," he said, "that all those independent organizations, not excepting Mosby's, are injurious to us, and the occasional dashes they make do not compensate for the disorganization and dissatisfaction produced among the other troops."

Indorsement Pigeonholed

Lee indorsed the letter to the Secretary of War with the request that the exemption granted to McNeill's command be revoked. It reached the Adjutant and Inspector General's Office on 18 February

and died there under the indorsement "No action"—ostensibly because McNeill's Rangers, during one of their "occasional dashes," had succeeded in capturing two Union major generals, Crook and Kelley, in their beds in Cumberland, Maryland, on the 21st of that month. The Rangers' reprieve was short lived, however, for Appomatox was now only seven weeks in the future.

The significance of the role played by partisan forces in the Civil War has been debated over the years. Some historians and writers have characterized it as having been of no more than nuisance value, while others have taken the stand that the Southern irregulars exercised a considerable influence upon both the conduct and duration of the war.

There were those in the Confederacy who were lavish in their praise of the partisans' accomplishments and others who were just as ardent in their criticism and condemnation of the Southern partisans and the type of warfare they pursued. The fact remains, however, that the Confederate government saw fit to abolish the law authorizing partisan corps a year before the end of the war and at a time when the military fortunes of the South appeared anything but bright.

On the Union side, Grant, who had made the statement in 1862 that such organizations were "no detriment to the cause of the Union," found it necessary in the summer of 1864 to direct Sheridan to send a division of cavalry ranging through Virginia's Loudon County "to destroy and carry off the crops, animals, Negros, and all men under 50 years of age capable of bearing arms." "In this way," said Grant, "you will get many of Mosby's men." In November of that year he wrote Sheridan that "there is no doubt about the necessity of clearing out that country so that it will not support Mosby's gang."

Rosecrans, under fire from Washington in late 1864 as a result of his inaction in Tennessee, pointed out to his critics that he would "most probably have had a flying enemy to pursue, with a command daily fritted away by the large detachments required to guard forage and provision trains."

Sheridan Changes View

Sheridan, whose troops had been continually harrassed by partisans throughout the course of his operations in the Shenandoah Valley, appears to have changed his opinion with the passage of time. In his official report of the operations of the Army of the Shenandoah, which he submitted to the Army Chief of Staff under the date of 26 April 1866, Sheridan wrote:

During this campaign I was at times annoyed by guerrilla bands, the most formidable of which was under a partisan chief named Mosby. . . . I had constantly refused to operate against these bands, believing them to be, substantially, a benefit to me, as they prevented straggling and kept my trains well-closed up, and discharged such other duties as would have required a provost guard of at least two regiments of cavalry.

However, when his *Memoirs* were published some 22 years later, they contained a comment which leaves the impression that Sheridan had come to regard the "duties" discharged by the partisans in the valley as a hindrance rather than an asset to his own operations. At this later date Sheridan recorded:

During the entire campaign I had been annoyed by guerrilla bands under such partisan chiefs as Mosby, White, Gilmor, McNeill, and others, and this had considerably depleted my line-of-battle strength, necessitating as it did large escorts for my supply trains.

In his introduction to Virgil Carrington Jones' *Gray Ghosts and Rebel Raiders*, Bruce Catton credits the Virginia Confederates with stumbling on to one of the

secrets of modern war through their initiation and vigorous support of a resistance movement for occupied territory. He points out, on the other hand, that "if the Confederates had anticipated modern warfare by devising a ruthless resistance movement, the Federals countered by bringing on an equally ruthless version of total war in reprisal."

Conclusion

The exploits of the South's partisan rangers have been history now for almost a hundred years. Be that as it may, the field commander of the future with his widely dispersed units and installations may well find himself confronted with area defense and security problems not unlike those posed to his Union counterparts of a century ago by the hit-and-run tactics of the Confederate partisans. The ambuscades, bridge burning, train wrecking, and telegraph line cutting carried on by the mounted partisans will be supplanted by airborne raids, attacks by infiltrated units, and attacks by guerrillas and subversive elements, but the objective will be the same—the destruction or capture of isolated units, attacks upon lines of communication, and the disruption of administrative support operations in general.

If we are to credit the Confederate partisans with developing this type warfare to a high degree of effectiveness, we can credit a Union commander with having proposed a countermeasure against it. In his very unpopular order of the day issued on 14 July 1862, Major General Pope proposed that the Army of Virginia change both its attitude and its style of fighting. As one of his innovations he stated that his new command would henceforth discard the idea of operating from "bases of supplies."

Admittedly, this proposal was based upon the concept that his troops would live off the country. At the same time there is no reason to believe that his subsequent orders that "the use of trains for carrying subsistence will be dispensed with as far as possible," and that "no supply and baggage trains of any description will be used unless so stated specifically in the order for movement" were not aimed primarily at improving the mobility of his forces and decreasing their dependence upon lines of communication which were vulnerable to attacks by guerrillas and other hostile elements. In this, John Pope appears to have been ahead of his time.

We may be truly thankful every hour of every day for our Armed Forces—the sturdy guardians of America on the land, on the sea, and in the air, and prime movers in our national effort to achieve the conquest of space for the security of the United States and the greater good of all humanity. If we are to defend our freedom successfully, we must continue to pay the price in sacrifice and service necessary to maintain military forces which compel the respect of any would-be aggressor. It has been well said that if a nation values anything more than freedom, it will lose its freedom; and that if it is comfort or money which it values more, it will lose that, too.

Secretary of the Army Wilber M. Brucker

USA CGSC Role In Reserve Component Affairs

Colonel Edward C. Dunn, *Armor*
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At no other time in our military history have we ever needed to stress quality rather than quantity more than during these crucial years.

—Under Secretary of the Army
Hugh M. Milton, II

MORE than 13,000 nonresident officers (mostly from the Reserve components) look to the College for command and general staff instruction. Leavenworth's role in Reserve component affairs is, of course, an important one, since it concerns the professional education of the top level of leadership of the National Guard and Army Reserves—the senior commanders and general staff officers. The College's broad aims in the nonresident instruction field have been based on recognition of the Army's urgent need for high-caliber, truly *Ready* Reserves. The Chief of Staff's statement in early 1956 that "the necessity to strengthen our Reserve forces has never been more vital than it is now, within this era where 'time-compression' prevails" underlined this need. As USA CGSC has interpreted this statement and supporting guidance from Department of the Army and US CONARC, the drive in the Reserves has to be for *quality* to meet the demands of modern war. This idea has become a basic part of College philosophy. Also basic is the idea of *one Army*, of which the Reserve components are a vital integrated part—ready to close ranks promptly whenever required for the good of the Nation and of the Army as a whole.

Shortly after assuming command of the College in July 1956, Major General Lionel C. McGarr became seriously concerned by the fact that a significant timelag existed between the presentation of instructional material to resident classes and the availability of the same material to the nonresident student. Since World War II the College, along with the other Army service schools, had followed a three to four-year cycle concept in the revision of its nonresident instructional material. The College had programed three extension courses during the period 1948-56. None of them had been completely written prior to being superseded. The timelag between resident and nonresident instruction assumed added significance from the fact that, due to progress in atomics and the new Pentomic organizations, the resident instruction itself was out of date. The pro-

Recognizing the Army's urgent need for high-caliber Ready Reserves, the USA CGSC is contributing toward this goal through increased emphasis and complete revision of its nonresident instruction courses

duction of nonresident material is, of course, only one part of the College "production line" for instructional material. It can move only as fast as the production of the basic resident material. Thus it was apparent that an essential first step in any complete rewrite of nonresident instructional material would be the modernization of the resident material itself. Moreover, the extra effort involved in rewrite based solely on elimination of the timelag could be avoided, if the rewrite were based on up-to-date material.

The basic problem was to determine a program and revision schedule which would keep nonresident material as nearly abreast of resident material as feasible, and then to *accomplish* the program.

An intensive study revealed that to eliminate this lag, it would be necessary to move forward from a three-year production cycle to an annual revision cycle for nonresident instructional material. To accomplish this objective in a "normal" year alone would be a sizable task. The prospects of any appreciable personnel augmentation except through already existing College resources appeared slight. At the same time, the contemplated complete revision of the 1957-58 resident curriculum offered a unique opportunity to bring nonresident material completely abreast of the resident. The complete modernization of nonresident instruction in step with resident changes also offered the College the opportunity of injecting a strong vitalizing influence into the Reserve components training program of the Army as a whole.

After detailed study of the problem by the staff, including an examination of methods used by the other Army service schools and those of the sister services, the Commandant decided in October 1956 to shift to a one-year revision cycle for nonresident material, effective with the 1957-58 school year.

Since the 1956-57 nonresident courses were already completely prepared and underway, extensive changes were not practicable for that year. However, the following significant steps toward modernization were taken while the complete rewrite for the following 1957-58 courses was underway:

1. Publication of the College's first extension subcourse devoted entirely to atomic techniques was expedited.

2. Eighty-five percent of the Command and General Staff instructional material to be used by US Army Reserve school students in their active duty phase (1957 summer camp) was brought up to date with the resident 1956-57 material.

3. A gratuitous issue of instructional material on the new Pentomic infantry division (ROCID) and the reorganized armored division (ROCAD) was made to each Reserve component division participating in the unit Staff Training Program.

College Management of the 1957-58 Nonresident Curriculum

The decision to effect complete revision of nonresident material in 1957-58 caused an extensive reappraisal of the entire nonresident program. Major changes and far-reaching improvements in organization and in production techniques resulting from this reappraisal are outlined in this and succeeding paragraphs.

One possible course of action to which the Commandant gave detailed consideration in management of the new nonresi-

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dent curriculum was a major reorganization wherein the writing of extension courses would be taken over by author-instructors of the resident instructional departments. This action would have resulted in disbanding the separate nonresident instructional department and redistributing its personnel resources. The College had actually used such a system prior to 1951. After weighing the advantages and disadvantages of the two systems, the Commandant decided not to switch back to the former system. Governing reasons for this decision were: it was undesirable to place any additional burden on the resident instructional departments which would detract from their primary mission; the grouping of nonresident author-instructors into one department appeared to permit most economical utilization of personnel and to ensure a higher quality nonresident product; and the grouping of all nonresident functions into one department fixed responsibility for, and ensured appropriate emphasis on, the nonresident instructional mission.

The soundness of this basic decision was borne out by results produced in 1957-58. The complete rewrite actually was finished in one year as planned—an unprecedented accomplishment in the nonresident field, so far as is known to the College, and a great tribute to the ability and dedication of the officers, soldiers, and civilians of the Nonresident Instruction Department.

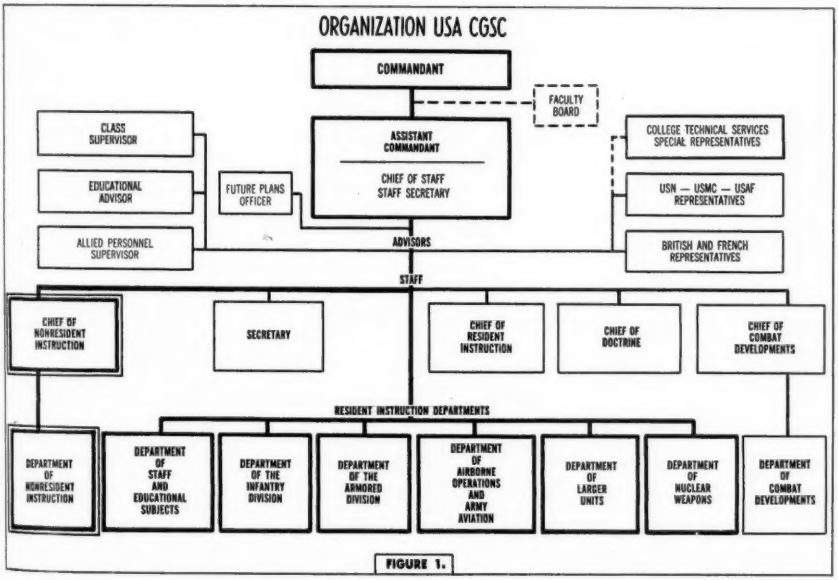


FIGURE 1.

Army-wide favorable reaction to the new nonresident instructional material was the best indication of its soundness and high quality. During the year, representatives of branch service schools visited the College to study its nonresident organization, methods, and techniques.

As an initial step toward ensuring appropriate emphasis on the College nonresident mission and the important part it plays in the preparedness of the Reserve components, in December 1956, as a part of the over-all reorganization of

the College staff and instructional departments, the Chief of the Department of Nonresident Instruction was placed on the major staff level with the other principal members of the College coordinating staff. As Chief of Nonresident Instruction (C/NRI) this officer became the College staff officer not only for nonresident instruction but also for Reserve Component Affairs. (See Figure 1.)

The Department of Nonresident Instruction did not undergo a major reorganization for 1957-58. The Extension Course Section of the department was reorganized internally to reflect the functional organization of the new resident departments and to effect a closer day-to-day working relationship between resident and nonresident author-instructors. Adjustments were made in the department table of distribution to ensure appropriate representation of all the arms and services. Also the Department TD was slightly expanded from College resources made available by the reorganization of the College. Thus the department organization constituted a "miniature version" of the entire staff and faculty and reflected the College concept of combined-arms and services teamwork. (DNRI internal organization is shown in Figure 2.)

Detailed annual planning of the nonresident curriculum for 1957-58 was conducted *concurrently* in phase with planning for the resident curriculum as a new feature of College management. No separate doctrinal control system was necessary for nonresident instruction since the doctrinal basis of all nonresident material is the basic resident material. The doctrinal basis of the resident material is, of course, controlled by the Chief of Doc-

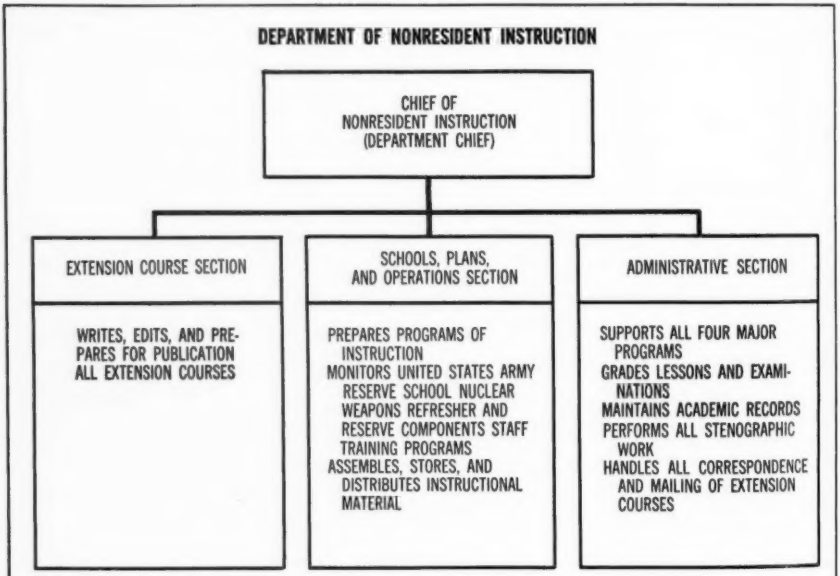

DEPARTMENT OF NONRESIDENT INSTRUCTION
CHIEF OF NONRESIDENT INSTRUCTION (DEPARTMENT CHIEF)
EXTENSION COURSE SECTION
WRITES, EDITS, AND PREPARES FOR PUBLICATION ALL EXTENSION COURSES
SCHOOLS, PLANS, AND OPERATIONS SECTION
PREPARES PROGRAMS OF INSTRUCTION
MONITORS UNITED STATES ARMY RESERVE SCHOOL NUCLEAR WEAPONS REFRESHER AND RESERVE COMPONENTS STAFF TRAINING PROGRAMS
ASSEMBLES, STORES, AND DISTRIBUTES INSTRUCTIONAL MATERIAL
ADMINISTRATIVE SECTION
SUPPORTS ALL FOUR MAJOR PROGRAMS
GRADES LESSONS AND EXAMINATIONS
MAINTAINS ACADEMIC RECORDS
PERFORMS ALL STENOGRAPHIC WORK
HANDLES ALL CORRESPONDENCE AND MAILING OF EXTENSION COURSES

FIGURE 2.

trine (C/DOC). C/NRI is held responsible for ensuring that all nonresident instructional material parallels the resident instructional material, and the review of such material is decentralized to him. As a member of the Faculty Board, C/NRI is kept in close day-to-day touch with doctrinal developments, which is absolutely essential to enable him to carry out his review, function properly, and to ensure that nonresident material is kept completely abreast of the resident material *during* the development process.

Final College control of the nonresident curriculum is maintained by command review of the nonresident Programs of Instruction (POI) by the Commandant and Assistant Commandant prior to their submission to US CONARC.

The New Extension Course

The USA CGSC extension course program is part of the Army-wide correspondence system of instruction. Through home study the student teaches himself, using material provided to him through the mails by the College. Each lesson involves practical work in the form of a set of objective exercises which he mails to the College for grading. Each subcourse (usually eight-nine lessons) contains an examination which he also submits to the College for grading. Completion of the prescribed subcourses—the exact identity and number of these necessarily change from year to year—leads to a certificate of completion.

Prior to 1957-58 the College extension course program had been a lengthy one, paralleling the resident Regular Course. Experience indicated that relatively few students finished the entire program, and those students who did, took an impracticable number of years to reach their final goal. Therefore, with approval of US CONARC and Department of the Army, the College in 1957-58 condensed the program into a shorter one which paralleled the resident Associate Course and was based thereon. This action reflects a basic principle of College management: the Associate Course is based on the Regular Course and the nonresident courses, including the extension course program and the USAR school course, are based on the Associate Course. This ensures high quality and consistency in all programs, simpler and more effective College supervision and coordination, and eliminates unnecessary duplication of work.

Advantages of the New Program

Over-all length of the program was condensed in 1957-58 from 41 to 30 subcourses, of which the student completes a minimum of 25 to obtain a certificate of completion. This enables the student to finish the course at a more useful age, and reduces "dropouts." Further, the new, shorter course permits the student to choose either a combat or logistical option. It enables the average student, for example the Reserve officer whose unit duties take up much of his time, to complete the program within a reasonable period. Moreover, it is a *manageable* program which the College can keep up to date and to high standards by *annual* revision as opposed to the former three-year writing cycle.

The initial complete nonresident rewrite in 1957-58 was only made possible, however, by a combination of the complete resident rewrite, improved production methods, outstanding performance by authors, and assistance from US CONARC.

Better Methods and Faster Production

The Department of Nonresident Instruction has developed production procedures and techniques which not only save time, but also improve quality. These include a simplified and improved correspondence course format; closer coordination with resident departments; and simplified and improved procedures for

directing the author's efforts and for final review of his work. These improved procedures and intensive individual endeavor enable authors to write at a speed approximately double the "norm" of past years and at the same time turn out a better product.

Assistance From US CONARC

US CONARC assisted by eliminating its detailed prepublication review of extension course manuscripts, upon recommendation of the College, a review that was unnecessary since NRI is based on resident instruction and resident instruction is controlled through US CONARC review of the POI and doctrine. This action meant that each new subcourse reached the nonresident student two to three months earlier than in previous years. Upon request of the College, US CONARC also made available as authors a number of graduates of the 1956-57 Regular Course on a temporary basis pending their reporting dates at new stations.

The "Prep" Course

The revised extension course program inaugurated the USA CGSC Preparatory ("Leavenworth Prep") Course for future resident students. This short course consists of selected subcourses designed to give the student a basic foundation in atomic techniques, general staff procedures, and the new division organizations. Before the end of the 1957-58 school year more than 650 US officers (mostly from the Active Army) were enrolled along with more than 220 Allied students from 33 different countries. (The latter group are administered through Military Assistance Advisory Groups and US Military Attachés.) The preparatory course performs the valuable function of bringing future resident students up to a more nearly common standard in fundamental subjects prior to entering the resident Regular or Associate Course. Participation is on a voluntary basis. This course not only contributes to improved professionalism for US officers of the Active Army, but also enables both US and Allied officers to progress faster upon arrival at Leavenworth.

It is worth noting that not only the preparatory course, but also *all* subcourses of the USA CGSC extension course, are available to officers of the Active Army as well as to reservists. *These courses offer an existing, completely modern resource for improving education of active officers which could well be more widely exploited by commanders in the field and by individual officers.*

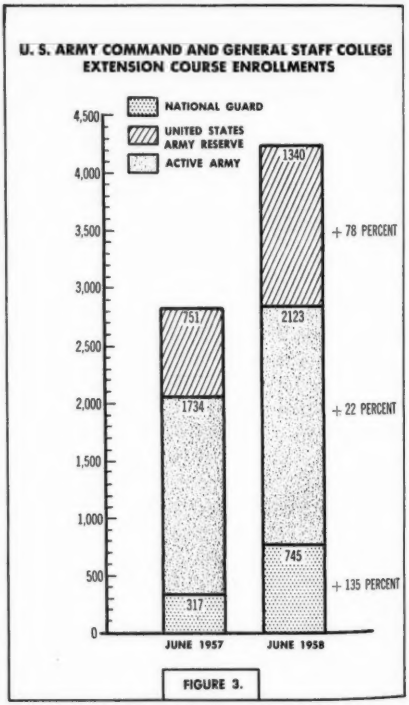


FIGURE 3.

Student Reaction to the New Program

Comments during the year from the 4,200 students in this program indicated

that the complete rewrite was producing an enthusiastic response in the field. Overall participation in the extension course program increased during 1957-58 by more than 50 percent. (See Figure 3.)

USAR School CGS Course

The USAR School Associate Command and General Staff Course is part of an Army-wide program to provide professional military education for officers of the Reserve components at company and advanced branch, as well as CGS level.

Like the extension course program, the USAR school course parallels the resident Associate Course. It is the Associate Course phased over a five-year period, modernized annually. (See Figure 4.)

From September through May these students attend reserve duty training (RDT)—24 two-hour classes (unpaid drill periods) for a total of 48 hours. If they do not live near one of the 201 USAR CGS departments scattered throughout the US, they can accomplish this part of their year's work by the extension course methods. In other words, the College has completely integrated these two programs so as to reach the qualified student wherever he is. (See Figure 5.)

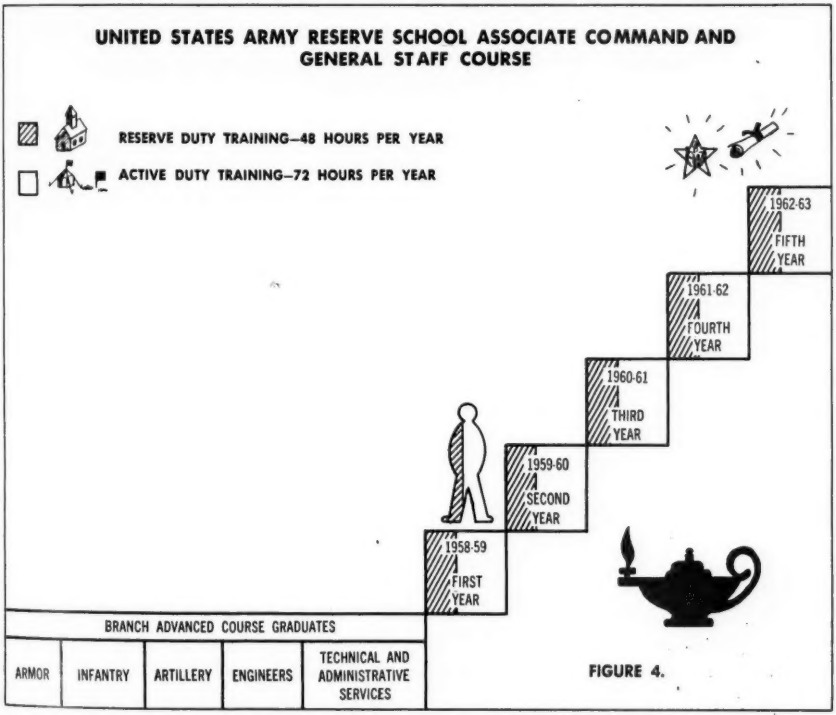


FIGURE 4.

To accomplish the rest of his 120 hours a year, the student attends a two-week active duty for training period (ADT) at an Active Army post designated by his Army commander. There he receives the remainder of his year's work in a solid 72 hours of classes.

Thus, over a five-year period the stu-

dent receives 600 hours of the most up-to-date instruction and gets the equivalent of the Associate Course. He receives a certificate of completion from his Army commander.

The College sets the standards in this USAR school CGS course by ensuring that enrollees have credit for advanced branch level of military education, and by writ-

/8 Improvements and Trends

As in the extension course, there was an enthusiastic response to the entirely new material injected into these courses during 1957-58. The latest and all-new /8 resident type instructional material was used throughout the 1957-58 course, with minimum necessary adaptation of lesson plans and training aids to fit them to the

LOCATIONS OF USAR SCHOOLS
SUPPORTED BY U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE
1958-59

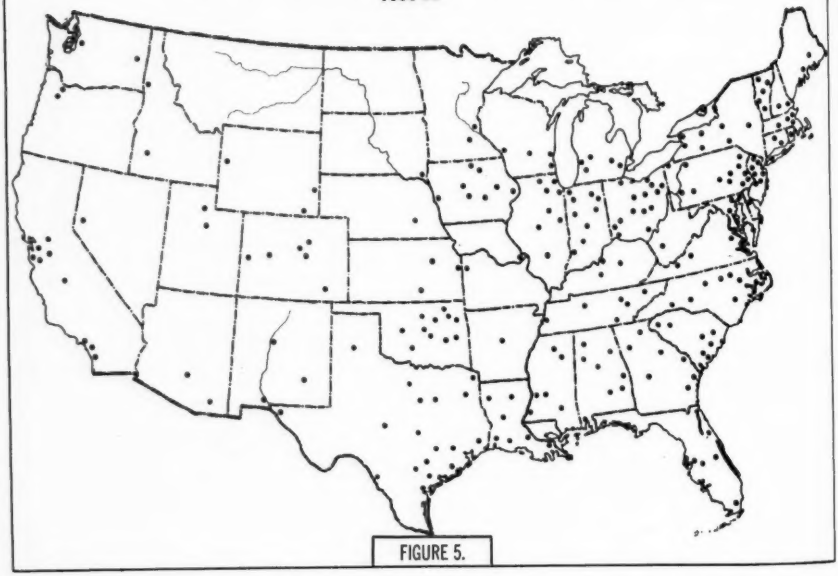


FIGURE 5.

ing the examinations and grading them at Fort Leavenworth. The College also screens all instructors, in cooperation with the Army commanders.

The schools are actually conducted by the Army commanders. Their faculties are manned by some 500 qualified reservists who are graduates of one of the College's courses. The College prepares the Program of Instruction and furnishes all instructional material.

facilities and needs of Reserve component instructors available.

1957-58 trends in this program were healthy ones:

1. Enrollment was over 5,400—slightly higher than the preceding year, in spite of more rigid standards and the elimination of drill pay for students.

2. US CONARC's lowering of the initial enrollment age from 48 to 45 made for a younger student body.

3. The College raised the prestige of this course by bringing the final or fifth year students from all Army areas in to Fort Leavenworth for their final ADT period, for the first time in the summer of 1958. This significant step, which will be continued in future years, enabled the College to add classified instruction in atomics and future warfare to the course, as well as certain other features, such as a map maneuver and a limited amount of "guest" instruction by members of the resident faculty. The quality of the instruction was also improved by the academic facilities available at the College. This program also ensures fuller use of the College plant without eliminating the vitally needed summer rewrite period for the College staff and faculty.

Staff Training Program

A third USA CGSC nonresident program is the *Staff Training Program for Reserve Component Units.* This is part of an Army-wide program set up by US CONARC to improve the efficiency of unit staffs at all levels up to and including division and logistical command level in units of the Ready Reserve. The College implements its portion of the program by means of an annual *Special Catalog* in which are listed selected resident units of instruction designed to supplement the important annual refresher courses which the College conducts each May for the commanders and staffs of Reserve and National Guard Divisions and Reserve Logistical Commands. As in other College nonresident programs, completely new material was distributed to these units in 1957-58 to assist Reserve component units in keeping abreast of the latest developments and in preparing for their reorganization as planned by Department of the Army.

Nuclear Weapons Employment Refresher Course

A fourth USA CGSC nonresident program is the *Nuclear Weapons Employment Refresher Course.* A significant difference in this program as compared with the others is that it consists mainly of classified material. The course is designed to keep MOS prefix 5 qualified officers abreast of latest developments in the nuclear weapons employment field. The College annually furnishes revised material for the course to major overseas commanders and to commanders of the Zone of Interior Armies and the Military District of Washington. The program of instruction is a five-day one.

College Liaison Program in Reserve Affairs

The College has been traditionally conscious of its obligations to members of the Reserve components of the Army. In line with the *one Army* concept mentioned earlier in this article, General McGarr has sought to strengthen College ties with "off-campus" members of the student body, not only those currently enrolled, but also the "alumni" who look to the College for periodic, refresher type instruction. The deserved stature of these many thousand officers in their home communities throughout the United States makes them a vital source of "grass roots" support for the Army, the value of which cannot be overestimated. These highly patriotic senior officers occupy responsible civilian positions in industry, commerce and the professions, and positions with the press and other communications media, as well as key posts on college and university faculties throughout the country. Some of them occupy executive or legislative positions in local, state, or national government. The College's liaison effort in the field of Reserve affairs is an important means of maintaining the understanding and active support of these individuals for the Army as a whole.

To help identify and resolve mutual problems, officers of the Department of Nonresident Instruction annually visit se-

lected USAR schools in each ZI Army area. Representatives from the ZI Army concerned, and Reserve Corps headquarters usually accompany such College representatives. Close coordination and cooperation by corps and army staffs, USAR school faculties, and the College have produced a steady improvement in standards of instruction during the last several years.

During the 1956-57 academic year, with US CONARC approval, the College instituted a policy of bringing selected USAR school officers to Fort Leavenworth for short tours of active duty with the Department of Nonresident Instruction. These officers occupy key positions on the faculties of the USAR schools. Their opinions, comments, and the mutual exchange of information between them and College agencies contribute much toward improving the support furnished by the College to the USAR school program.

Another important feature of College liaison with the Reserve components of the Army is the close contact established annually with commanders and staffs of the units while they are at Fort Leavenworth for annual refresher training.

In addition, the College includes in its guest speaker program officials of the Department of the Army and US CONARC who hold positions of key responsibility in the Reserve components program. For example, during 1956-57 the College was privileged to have the Honorable Hugh M. Milton, II, then Assistant Secretary of the Army (Manpower and Reserve Forces) and Lieutenant General Ridgely Gaither, then Deputy Commanding General for Reserve Forces, US CONARC, as graduation speakers for the two resident Associate classes. General Williston B. Palmer, then Vice Chief of Staff of the Army, and Major General Donald W. McGowan, Chief of the Army Division, National Guard Bureau, addressed the assembled commanders and staffs of the National Guard Divisions during their spring refresher course. Another highlight of the 1956-57 guest speaker program was an address by Major General Phillip D. Ginder, then Assistant Chief of Staff for Reserve Components, Department of the Army, to the resident classes on the salient features of Reserve components programs and policies.

To round out its liaison effort, the College in 1956-57 established the practice of having the nonresident department conduct special briefings for all officers (both students and faculty members) leaving the College on permanent change of station for Reserve component assignments.

1957-58 Improvements

In 1957-58 the desirable features of the 1956-57 liaison program were continued, expanded, and improved. The special briefings on Reserve Affairs for selected resident students and faculty members were enlarged into a unit of instruction on the training of Reserve components. This unit was developed as a panel discussion and presented to both the Regular and Associate resident classes as well as to all USAR school (fifth year) classes by the Department of Nonresident Instruction. It was well-received and coverage in this area will be increased in 1958-59.

The guest speaker program was further expanded in 1957-58. Lieutenant General Gaither returned in the fall as the Associate Course graduation speaker and Major General Ralph A. Palladino, Chief of Army Reserve and ROTC Affairs, Department of the Army, filled a similar role at the spring Associate Course graduation ceremony. General Lemnitzer, Vice Chief of Staff of the Army, and Major General McGowan conducted the annual forum at the National Guard Division Refresher Class. General Taylor, Chief of Staff of the Army, and Major General John W. Bowen, Assistant Chief of Staff for Reserve Components, Department of

the Army, addressed the Reserve Division Refresher Class. In addition, upon College request, US CONARC furnished a specially qualified team of officers headed by Colonel Louis Walsh to present a two-hour classified panel discussion on the Army's Reserve Forces Program to US officers of the faculty and the resident Regular and Spring Associate classes.

The guest speaker effort was extended into the USAR school program by obtaining three Reserve Division Commanders as graduation speakers for the three USAR school fifth year classes completing their courses at Fort Leavenworth during June, July, and August under the new "on campus" program mentioned earlier. Under CONARC's direction these speakers were nominated by the sponsoring ZI Army Commander: Major General Charles W. O'Bryant, Commanding General, 89th Infantry Division, representing the Commanding General, Fifth US Army; Major General Russell A. Ramsey, Commanding General, 83d Infantry Division, for the Commanding General, Second US Army; and Major General James E. Rudder, Commanding General, 90th Infantry Division, for the Commanding General, Fourth US Army. Their presence at these ceremonies and their well-prepared addresses furthered close cooperation between the *Reserve units* and the *USAR schools.*

Conduct of the final or fifth year ADT period of instruction for the USAR school CGS students from all six ZI Armies for the first time at Fort Leavenworth in the summer of 1958 gave a significant impetus to the entire liaison effort, as it marked the integration of the "off-campus" student body with the College itself.

Summary

Steady improvements in College nonresident programs initiated in 1956-57 saw their culmination in the complete (and unprecedented) rewrite of all nonresident instruction in one year, as planned, in 1957-58.

The 1957-58 nonresident school year was marked by increased student interest and a rising enrollment. During this year the College made an all-out effort to strive for *quality* as well as quantity in these programs. This effort will, of course, continue in future years. Its main ingredients are complete annual modernization of instructional material, high performance standards for both nonresident students and instructors, and close liaison with nonresident students and faculties as well as commanders of Reserve component units.

We do not have an Army Reserve, a National Guard, and a Regular Army as separate and distinct establishments. Rather, we have the Regular Army, the Army Reserve, and the National Guard as integral and mutually supporting portions of an entity, the United States Army.

General Maxwell D. Taylor

The Human Face of War

Lieutenant Colonel James R. Francis, *Medical Service Corps*
Student, US Army War College

NEW tactical concepts paint a composite picture of widely dispersed units, the doctrine of increased movement, tremendous firepower, small integrated unit employment, and increased reliance on the junior leader. Technology can produce the wherewithal of waging such a war, but it in no way improves the inherent capabilities of *man*.

What about man, described in that cliché as "The Ultimate Weapon"? Historically, he has tipped the scales of battle repeatedly despite expert estimation. He has always provided the unknown and motivating factor which makes war an inexact science, better called an art. Is this MAN a part of the weapons systems depicted? Can he be finitely predicted? *Or* does the planner and the commander have to accept him as the risk which he probably is?

In the process of examining man as he is, and *not* as one might *wish* him to be, it is necessary to relate man to the environment of the future in which many would place him. It also may be advisable to keep in mind that this precious commodity is susceptible to stress and strain.

Doctrinal Concepts

Concepts concerning operation on the atomic battlefield must be developed carefully. Capabilities of machines or equipment must be correlated with the capabilities of man to operate and maintain such equipment. For example, the reliability and accuracy of the missile for delivery of desired firepower is dependent to a considerable degree upon the human error in serving, maintaining, and firing such a weapon. This is true from the aiming of the rifle to employment of the complex equipment being introduced into our Army at a transcendent rate.

Man must be considered as a factor in doctrinal concepts. Failure to assess his capabilities properly is as fallacious as riding forth to do battle with a weapon system of unknown capabilities. Human stamina, reactions, capabilities and limitations, and human moral fiber probably will exert a decisive effect upon the best of estimates.

By this token, no doctrine of future combat operations is any stronger than the human foundation upon which it is based. Yet most often ignored is the sometimes frail, and oftentimes magnificent, reed upon which all concepts must lean—MAN. Too few concepts recognize that the human involved requires preventive maintenance *and* at frequent intervals. Any experienced military reader recognizes this as a truism, needing no further expounding. It would seem necessary to assure that each future concept pass the conclusive test of, "Have I truly considered the *human*(s) involved?"

Today's intricate weapons systems and those envisaged for the future must take into account the capabilities and limitations of the basic weapon—MAN—in order to achieve total victory in any future war

Conflicting Factors

Fundamentally, any "nonvolunteer citizens' armed force" has the unrewarding task of rapidly converting the peaceful civilian into the aggressive soldier. The raw material with which they work is already performed morally and, to a great extent, mentally at the time of induction. To the recruit, his first, and somewhat formative, impressions are opposed to his previous environmental conditioning. To this is added the fact that the armed force must teach a basic skill which is innately repugnant to the wielder—the art of killing another human being. This requires a thorough consideration of stress and strain.

The repugnance to kill probably is as great a factor in combat military manpower failure as any other. When compensating conditions or causatives no longer exist, the effects of this stress often boil up or return to exact a penalty —the "guilt complex." Seemingly, identity with the group, variously described as the "herd instinct," "esprit de corps," or "unit morale," provides the most beneficial support against this and the stress of fear. The broadened scope of war has erased boundaries of relative vulnerability.

Fear

Fear has been adequately described in modern literature. It is not always recognized, however, that *most* soldiers *and their leaders* experience fear. The source of fear varies widely between individuals. The variance in degree of fear and method of compensation also is marked. The soldier who is without fear is an extremely rare phenomenon and *may* be as much danger to his unit as several of the enemy.

There is ultimately a tinge of the unknown which creeps in and complicates the fear reaction. Recent popular articles ascribing many dire things to mass radiation have further compounded the situation. Thoughtful military psychiatrists have added "Psychological Trauma" to their nuclear assessments. This is not a new form of mental reaction. It is only an added stress in the fear group that must be recognized and adequately combated if we are to field a successful "atomic" army. This requires a healthy attention to leadership *and* reassurance to the "led" that their combat leaders will get them on and off battlefields as successfully (or more) in the future as they have in the past.

Unquestionably, there must be concerted efforts to stop morbid and unfruitful preoccupation with individual radiation dosage levels. This must be accomplished at least until the state of the entire art of dosimetry and radiation survey becomes more exact from the "mechanical" as well as the biological standpoint. Doctrine and training must eliminate scaring our soldiers needlessly until we know what to be scared about, at what level, what preventive measures are feasible, and what to do about information or data collected.

Fruitful troop conditioning may be possible by continued, but accelerated, troop participation at Desert Rock and further development of battle simulators (atomic, sound, and confusion) as well as training conditions which more nearly approach a nuclear battlefield. In the process our men *must* learn the ABC's of survival.

Lieutenant Colonel James R. Francis entered the service in 1932 and has served in the Infantry as well as the Army Medical Service. His service includes duty in the Pacific; Department of the Army Technical Staff; Headquarters, European Command and US Army Europe as plans officer in the medical division; and command of a separate medical battalion and a medical group. He attended the 1947-48 Regular Course of the USA CGSC and served on the faculty of the College from 1955 to 1958. He now is a member of the 1958-59 class at the US Army War College, Carlisle Barracks, Pennsylvania.

Fatigue

Lack of rest seems to be a constant no matter how variable the other components that make up the environment loosely named "combat conditions." This stress is both physical and mental. It has been recognized under various guises since the beginning of war. For centuries the surgeon and the commander were loathe to accept its manifestations for what they were. Not until the end of World War I did the condition then called "shellshock" receive scientific scrutiny and recognition as to causative agents. During World War II and Korea it was called "combat exhaustion" or "combat fatigue."

Where this evidence of human frailty was taken into account in the commander's concepts and plans, adequate preparations were made to prevent or accommodate it. Where it was not taken into account, manpower losses soon forced it upon the commander's attention. Personnel policies and developmental concepts which do not accept or recognize this probable condition are doomed to failure.

It would seem clear that we can never again plan to leave men continuously in combat in a campaign (or interlocking series thereof) such as from Normandy to Pilsen. Eventually, provision must be made for rest or relief. Good food at appropriate intervals and a hot bath and change of clothes may be more useful than all the "drugs" yet compounded. This is essential preventive maintenance.

Man has some unique characteristics not found in machines. Among these are emotions, intellect, compassion, and the need for sleep. Lack of sleep can blunt or obliterate the gainful exercise of the other three. There is strong evidence that points to the consideration that it may overcome one of man's strongest instincts —self-preservation. A "Gung Ho" unit can quickly become a "Goin Slo" outfit under conditions of exhaustion.

Considerations

All new doctrine (particularly in fields of tactics, techniques of execution, and mental and physical conditioning) must be called upon to answer truthfully, "Where in this new concept have you looked at **The Human Face of War**?" To be realistic the answer to this question can be given only after careful consideration of these complementing factors.

1. Has man been carefully evaluated under the conditions dreamed up for him?

2. Will man of the future be the result of a "biological breakthrough" that will permit him to perform impossible physical and mental feats, *or*, must he, too, rest like his forefathers?

A true test of any modern concept lies in honest answers to the following questions:

1. Can man carry it out?

2. Can he move continuously like the amoeba, without rest, irradiated and perhaps irrational, and succeed?

3. Can he *really* psychologically withstand nuclear cataclysm, mass slaughter in others, or the threat thereof to himself?

Conclusion

Since man *is* the focal point and foundation of all concepts in war, it seems time to take stock of him anew. Only through intelligent assessment of his capabilities and limitations *and* development of concepts based on his actual merits and shortcomings can we hope for victory, in the future. This axiom stands irrespective of the scope of war or the level of nuclear weapons usage. *The victor on any future battlefield will be the most intelligent user of his most priceless commodity*—**MAN.**

MILITARY NOTES AROUND THE WORLD

UNITED STATES

New Type Canteens

A vacuum type canteen developed by the Army has a plastic mouthpiece that prevents harm to lips in below zero weather. This canteen also is insulated to carry water for two days in arctic cold without freezing.

A lightweight, disposable plastic canteen, especially designed to be carried by troops equipped with body armor, is under test by the Marine Corps.—News item.

Joint Radar Use

A large-scale merger of civilian and military long-range radar equipment and installations has been announced. The plan, which goes into effect at an early date, initially calls for the integration of 31 installations with aircraft spotting capability of up to 200 miles as the first step in the program. More installations are planned for joint use at a later date with approximately one-half of the 100 radar traffic control sets of the CAA (Civil Aeronautics Administration) participating. The CAA will use the radar coverage for air traffic control. The Armed Forces will use it for air defense purposes. The joint program is expected to reduce equipment and operating costs, and cut down on radar interference and coordination problems.—News item.

Night Viewing Device

The Army's new *Sniperscope* is a greatly improved night viewing device which weighs less than the earlier model and

US Army Photograph

The improved *Sniperscope*

has a greater range and longer life. The instrument is adaptable to a wide variety of infantry weapons ranging from the caliber .30 rifle to the 106-mm recoilless rifle. Earlier versions were limited to use with the carbine.—Official release.

Combat Boots Tested

Two new types of combat boots are under test. Both types have rounded sole edges, beveled heels, and hard toe caps. The test is being conducted jointly by the Army Surgeon General's Office and the Quartermaster as part of an Army program to develop and standardize a common interservice footwear.—News item.

Tilt-Wing Development

The *K-16B* combination vertical takeoff and landing and short takeoff and landing (VTOL/STOL) amphibious research aircraft utilizes the propeller-rotor concept (MR, June 1957, p 69). It is powered by two *T-58* gas turbine engines.

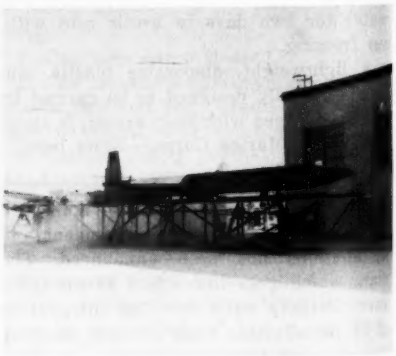
Artist's conception of the *K-16B*

Small, controllable flaps on the propeller-rotors give the pilot positive control of the aircraft at speeds up to 50 miles an hour. Above this speed conventional aircraft controls take over. Large extensible flaps on the wing provide additional lift during takeoffs, landings, and slow-speed flight.—News item.

Rugged Missile

A special device called the *G-Shooter* is used to put the *X-7* missile (MR, Sep 1958, p 77) and its instrument and electronic systems through a realistic ground test to assure that it will perform reliably in normal operation. To conduct the test, the *X-7* is mounted on the rails of the *G-Shooter* which blasts the missile to an 18G acceleration and then stops it after only two feet of travel. The acceleration simulates the fantastic drive which rockets the missile to faster-than-sound speed required when it is launched to permit the ramjet engines it tests to begin functioning. Eight bands of nylon webbing are strung under the rails to act as brakes and to keep the missile from flying off the rails as it attains a speed of 23 feet per second in the first six inches of travel.

Four of the webs stretch to their limits, absorbing the shock, then snap as planned to prevent rebound. The other four are used as a safety factor. The *X-7* is used to test ramjet engines under development, and will test four advanced



***X-7* in acceleration test**

types of ramjets intended for use in interceptor missiles.

The *X-7* has flown in excess of four times the speed of sound, making it the fastest air-breathing missile in the world. It also has flown higher than any other ramjet vehicle, although the exact altitude it attained has not been released. One of the engines tested by the *X-7* is the main powerplant for the *Bomarc* in-

terceptor missile now in production for the Air Force, and planned for use in US Air Defense installations.—News item.

Big Missiles

The first successful test of the *Atlas* ICBM (MR, Oct 1958, p 74), using both the boosters and the sustainer motor, resulted in a flight of over 2,500 miles for the big missile. The *Atlas* is planned for a range of 6,325 miles and a speed in excess of 12,000 miles an hour. Its two booster engines have a thrust of 135,000 pounds each; the center sustainer motor develops a thrust of 100,000 pounds.

A test vehicle, a combination of the *Thor* and the *Vanguard* rockets, has been fired over a range of 6,000 miles. This missile has been used to test a nosecone made of layers of lightweight materials, such as fiberglass, which gradually melt away or burn in a process called "ablation" during the intense heat created by air friction in reentry of the ICBM into the atmosphere.

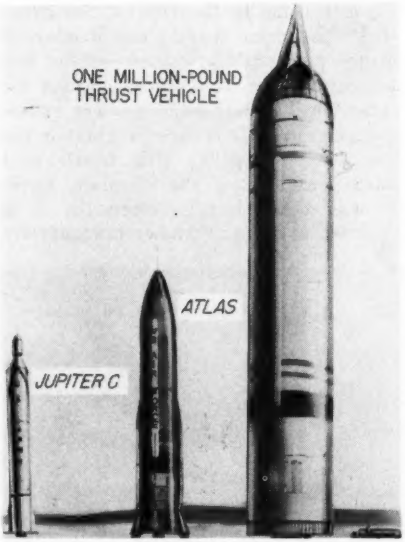
Research has been started on a single-chambered engine of about one million pounds thrust. The big rocket engine is expected to use a liquid propellant system similar in principle to the propulsion units of the *Atlas*, *Thor*, and *Jupiter* ballistic missiles, and the *Redstone* missile that provided the first-stage boost for the satellite launching *Jupiter C*.

The *Minuteman*, a dual-purpose, solid propellant missile still in the early design stage, can be assembled as a three-stage missile for ranges of 5,000 miles or more, and as a two-stage rocket for intermediate ranges.

A superpowerful solid fuel rocket motor has been test fired, and developed a thrust of more than 450,000 pounds, according to a report. The high thrust was sustained for a very short period.

Static test stands for rocket motors of one million pounds of thrust are now available at several locations within the United States, including the White Sands Proving Grounds where a 300,000-pound test facility has been enlarged to accommodate motors of this size.

Facilities of the Cape Canaveral Missile Range have been expanded to permit the countdown of three missiles to be carried on at the same time. Previously, the facility could accommodate only one countdown at a time, although other tests could be conducted simultaneously.



Comparison of one million-pound thrust missile with *Jupiter C* and *Atlas* ICBM

An all-inertial guidance system for long-range missiles has proved a success in laboratory and rocket sled tests, and flight tests are expected to begin next year. The all-inertial system uses a series of gyroscopes and a computer within the missile which automatically makes the changes necessary to keep the weapon on course. This system is considered to be proof against radio or radar jamming.—News item.

Weather Radar System

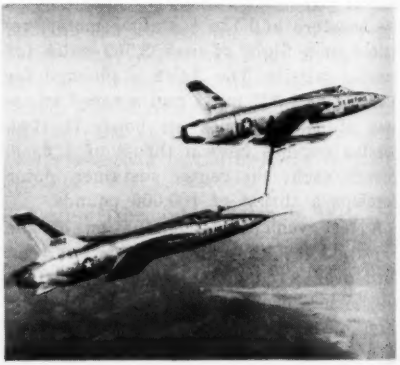
A standard United States Army *L-23D Seminole* command aircraft has become the first Army plane to be equipped with a weather avoidance radar system. The radar used in the system is the lightweight airborne *AVQ-50* which is mounted in a plastic radome in the nose of the *Seminole*. The system detects and displays a picture of turbulent weather as far distant as 80 miles. It also may be used for navigational terrain mapping. The radar-equipped *Seminole* is under evaluation for operational suitability. The *L-23D* is a military version of the six-place *Twin-Bonanza* civil aircraft. Normally, it is employed at corps or higher headquarters

Radar-equipped *Seminole*

for command, liaison, and courier service. It has a top speed of 240 miles an hour and a ceiling of 24,800 feet.—News item.

High-Speed Refueling

A package refueling kit for the *F-105 Thunderchief* permits refueling of the speedy fighter bombers at full speed, and is said to extend the range of the aircraft by as much as 70 percent. The *Thunderchief*, which is capable of a speed of about 1,300 miles an hour, is armed with one 20-mm cannon, rockets, and *Sidewinder* missiles, and is intended to deliver nuclear weapons. Projected models of the *F-105* include a tandem-seat trainer, a single-seat day fighter bomber with extra radar, and a two-place, all-weather fighter bomber. All will be powered by *J-75-10*



***F-105's* refuel at full speed**

turbojet engines. The *Thunderchief* is 63 feet long, has a wingspan of 35 feet, and weighs about 15 tons.—News item.

Amphibious Supply Vehicles

Two new wheeled amphibious vehicles with five- and 15-ton payload capacity are under development. The "amphibious lighters" feature lightweight aluminum construction, four-wheel drive, interchangeability of engines and power trains, and large diameter low-pressure tires.

The five-ton model will be powered by a single engine which supplies power to all four wheels and to a single propeller located in a recessed tunnel. It will be 35 feet long and nine feet wide, and will load and discharge cargo through removable side gates. Its speed will be 25 miles an hour on land and 10 afloat.

The 15-ton model will be powered by two 250-horsepower engines and will have a speed of 12 miles an hour afloat. It will be 45 feet long and 12½ feet wide, and will be equipped with a bow ramp.—News item.

Protective Suits

Protective clothing of the United States Army now includes a standardized impermeable suit for protection of missile-servicing crews against corrosive chemicals, and an aluminized fire-fighting suit.

The suit for protection against corrosive chemicals covers the crewman from head to foot and employs the *M-15* mask, a breathing apparatus which feeds compressed air from small tanks carried on the back. It is made of a coating of resin-modified butyl rubber over a cotton fabric base, and is impervious to red fuming nitric acid and other chemicals employed as fuels in missiles.

US Army Photograph

Suit for missile crewmen

The fire-fighting suit presently under test is made of flame retardant aluminized paper and a reflective aluminum foil, fastened together by a flame resistant adhesive. The face mask is provided with a pattern of tiny holes which permit visibility. The suit will fit over the duty uniform and will allow the user to wear a steel helmet and breathing apparatus.—Official release.

US Army Photograph

Protection for fire-fighters

Nuclear-Powered Icebreaker

A nuclear-powered icebreaker, to cost an estimated 60 million dollars, is to be built for the Coast Guard. Tentative plans call for a vessel 350 feet long—somewhat smaller than the nuclear-powered icebreaker the Soviets built for research in the Arctic. Construction of the vessel is expected to take at least three years. Eight of the nine icebreakers now operated by the United States Navy and the Coast Guard are of pre-World War II construction.—News item.

Aircraft Developments

The *B-70 Valkyrie* bomber and the *F-108* long-range interceptor, both of which are in the 2,000-mile-an-hour class, will be powered by *J-93* turbojet engines which currently are under production contract. The six-engine *Valkyrie* is planned as a replacement for the *B-52 Stratofortress*. The *F-108* will mount two of the *J-93* engines and is expected to be the first operational airplane capable of flying at more than three times the speed of sound. Armament of the *F-108* will include the *GAR-9*, a guided air-to-air atomic missile.

Contracts have been awarded for research in Project *Dyna-Soar* which is concerned with the development of a glider that would be boosted by rockets and soar around the earth at great altitudes and near satellite speeds. The glider would be a combination of the winged plane and the ballistic missile; able to land like an aircraft due to its winged configuration.

The phasing out of the *B-36* bombers from the operational units of the United States Air Force has been completed—the last of the 10-engine aircraft was removed from active service on 30 May 1958. The *B-36*, which had an active combat life of 11 years, was declared obsolete in 1957.—News item.

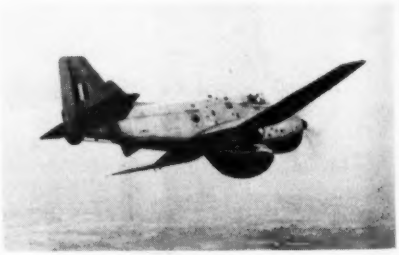
GREAT BRITAIN

Aircraft Direction Frigate

The *Chichester*, the third of five planned *Salisbury* class aircraft direction frigates, has been accepted for service with the Royal Navy. The *Chichester*, which is fitted with roll-stabilizers, is designed primarily for the direction of carrier or shore-based aircraft. For this purpose it is equipped with highly developed electronic gear. This class of frigates can also serve as light destroyers in offensive operations. They are all welded and largely prefabricated to permit rapid construction in an emergency.—News item.

Radar Aircraft

The *Fairey Gannet AEW Mk.3* flying radar control center (MR, Aug 1957, p 71) has been flight tested successfully. The airborne early warning (*AEW*) *Gannet* is powered by a *Double Mamba* propeller turbine engine and can operate from the flight deck of the smallest operational aircraft carrier. The radar scanner of the *Gannet* is housed in a huge dome under the fuselage. It will be used to extend the range of the defensive radar systems of carrier task forces, to direct fighters and



Fairey Gannet AEW Mk.3

strike aircraft on interception courses, and in antisubmarine operations. At an altitude of 25,000 feet the *Gannet* will have a radar detection range of 200 miles.—Official release.

'P.1B' Fire Control

The radar and fire control system of the *P.1B* all-weather fighter is known as *AIRPASS* (Airborne Interception Radar and Pilot's Attack Sight System). In this system, after the pilot locks the radar beam on a target, the radar tracks automatically. It presents the information to the pilot in such a way that he quickly and easily gets into a suitable position from which to attack, and assures that the weapons are aimed correctly even when the target is invisible to the pilot and traveling at supersonic speeds. A special feature of the system is an automatic warning de-

vice that tells the pilot when to break off the attack if he gets close enough to be in danger of colliding with the target.

The swept-wing *P.1B* weighs 16 tons when fully loaded and unofficially is reported to have a speed of about Mach 1.4.

A two-seat trainer version of the *P.1B* designated the *P.11*, retains the full operational equipment of the single-seat fighter. The *P.11* has a widened fuselage to accommodate two seats side by side.—News item.

Submarine Transferred

The midget *X* class submarine *Stickleback* has been transferred to Sweden where it was renamed the *Spiggen*. The midget underwater craft carries a crew of five and displaces 35 tons. The *Spiggen* is a sister ship of the *Sprat*, currently on loan to the US by Great Britain for use in testing harbor defenses.—News item.

PERU

Submarines Named

The four submarines under construction in the United States for the Peruvian Navy are to be named the *Angamos*, *Dos de Mayo*, *Iquique*, and *Abato*. The four older submarines in Peru's fleet, previously known as the *R1*, *R2*, *R3*, and *R4*, have been named *Ismay*, *Casma*, *Pacocha*, and *Arica* respectively. The *R* class underseacraft displaces 755 tons and have a surface speed of 14.5 knots. The four submarines under construction will displace 1,400 tons and have a speed of 16 knots.—News item.

COMMUNIST CHINA

Coastal Airfield

The Communist Chinese Air Force is now basing aircraft at Lungtien airfield, 110 miles across the Taiwan Strait from the northern end of Taiwan. The Lungtien airfield is 40 miles south of Minhow along the Fukien coast.—News item.

Atomic Agreement

According to an unconfirmed report, the Soviet Union has agreed to provide atomic weapons and ballistic missiles to the Communist Chinese armed forces. Under the terms of the agreement the USSR also will build four more atomic reactors in China and assist the Communist Chinese regime in electrifying its northwestern region by means of atomic energy. This brings to five the number of Soviet-supplied atomic reactors planned for China.

The type of missiles with which the Communist Chinese forces are to be equipped was not announced.—News item.

USSR

Polar Bases

The Soviet Union has announced her intention of establishing two new bases in Antarctica for the purpose of carrying out transcontinental explorations. One of the bases will be in Queen Maud Land, claimed by Norway (MR, May 1957, p 68). The other base will be on the coast of the Bellingshausen Sea. This coast is bisected by the boundary between the polar area claimed by Chile and what is sometimes called the American sector in Marie Byrd Land. The United States has no territorial claims in Antarctica and does not recognize any.—News item.

INDONESIA

Arms Pact

Under terms of an armament agreement the United States has provided the Indonesian Government with an undisclosed amount of small-arms, trucks, jeeps, and communications equipment. Payment for the equipment, according to the agreement, may be made either in dollars or Indonesian currency. It also is reported that Indonesia has accepted a British offer of specialized military training facilities for a group of Indonesian officers.—News item.

CANADA

Antisubmarine Warship

The *Restigouche*, the eighth of 14 planned antisubmarine frigates and the first of a new family of warships, is designed and equipped especially for submarine killing. The vessel is 366 feet long and displaces 2,900 tons. She carries three different types of radar and various types of underwater detection gear, including a new sonar unit which will operate at longer ranges and in poor water conditions. In action, the ship is airtight. Radioactive fallout can contaminate only the outer decks which are rounded off so that they can be hosed down in a few minutes to free them of contamination. The vessel is equipped with roll-stabilizers, and is reported to be capable of speeds in excess of 25 knots. Antisubmarine armament consists of two triple-barreled *Limbo* depth charge launchers and homing torpedos. The first seven of the antisubmarine frigates were of the *St. Laurent* class. The six vessels still to be completed will be of the *Restigouche* class.—News item.

'Caribou' Tested

The *DHC-4 Caribou*, a specialized type of utility aircraft, has completed initial test flights successfully. The *Caribou*, which can carry 28 fully equipped troops or two and one-half tons of freight, has a rear loading ramp for vehicles. The twin-engine aircraft is designed to use small, unimproved runways, and is said to be extremely rugged. The United States Army has ordered five of these aircraft to be delivered in 1959.—News item.

'Sidewinders' for RCAF

The *F2H3 Banshee* all-weather fighters of the Royal Canadian Air Force are to be equipped with *Sidewinder* air-to-air missiles. The *Sidewinder* is nine feet long and weighs 155 pounds. Its solid propellant rocket motor gives it a speed of Mach 2.5. It has an operational range of two miles at sea level and almost double that at higher operational altitudes. The *Sidewinder* uses an infrared homing guidance system.—News item.

AUSTRALIA

Rocket Range

The first successful firing of the British research missile *Black Knight* took place recently at the Woomera Rocket Range in central Australia. The exact height reached by the *Black Knight* was not announced, but it had been predicted that the rocket would attain an altitude of between 300 and 400 miles. This missile is an advanced development of the *Skylark* (MR, Jul 1958, p 71). It is a ballistic rocket designed primarily for research purposes, and is about 35 feet long and three feet in diameter.

A major construction project nearing completion is to be a launching site for a British missile called the *Blue Streak*. This 70-foot-long vehicle is powered by engines totaling 130,000 pounds of thrust and is expected to attain a speed of Mach 10.

Trials of a "stand-off bomb" also are scheduled for the Woomera Range. The "stand-off bomb" is an airborne rocket which is released by the bombing aircraft while still outside the antiaircraft defenses of a target area; the bomb then continues to the target under its own power.—News item.

Accurate Weapon

Australia's antitank guided weapon *Malkara* proved to be extremely accurate in range trials. The *Malkara*, a short-range, command-controlled weapon, is designed to destroy heavy tanks with a very high probability of kill with the first shot. The weapon, which also is expected to be effective against static defensive installations, uses a solid fuel propellant, is electronically controlled, and weighs about 200 pounds.—News item.

TURKEY

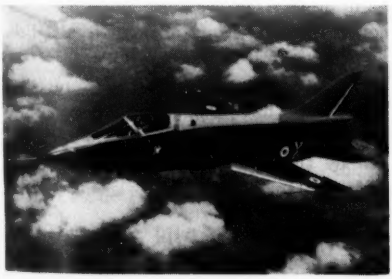
Soldier Education

The Turkish Government, with the help of the United States, is embarking on a project to reduce drastically the illiteracy of the soldiers in their 500,000-man army. Under this plan 100,000 soldiers a year will be taught to read and write. The annual cost of the project will be 60 million lire ($6,666,666), half of which will be provided by the United States.—News item.

FRANCE

Closed-Circuit Record

The *Breguet 1001 Taon*, a light tactical support aircraft designed to NATO specifications, has covered a 1,000-kilometer (621 miles) closed-circuit course at the



Light and speedy *Taon 1001*

record speed of 668 miles an hour. A standard *Orpheus 3* engine was used in the record-making flight. Production versions of the *Taon* will be equipped with the more powerful *Orpheus 12* turbojet engine.—News item.

Heavy Drop Tests

A total of eight parachutes were used simultaneously in a recent test in which a nine-ton bulldozer was paradropped successfully by a *Deux Ponts* military transport aircraft. In another aerial delivery test loads of 1.7 and 3.3 tons were parachuted from the lower deck of the double-deck airplane, and seven loads of 1,650 pounds each were dropped from the upper deck. The nine loads involved in the latter test were dropped within a distance of less than half a mile. The propeller-driven

Multichute drop of nine-ton bulldozer

Deux Ponts, which is powered by four 2,500-horsepower engines, can carry a load of almost 19 tons and weighs about 60 tons at takeoff. It has a maximum speed of 231 miles an hour and an operational range of 3,000 miles.—Official release.

Tactical Support Plane

The *SE.116 Voltigeur* tactical support aircraft has completed initial test flights. Production versions of the *Voltigeur* will be powered by two *Bastan* turboprop engines of 650 horsepower each, and will have a speed of over 300 miles an hour.—News item.

JAPAN

Submarine Construction

The *Oyashio*, the first submarine to be constructed in Japan since World War II, is planned for launching in February 1959, and is expected to be in fleet service a year later. Officially, the vessel will be designated the *SO-1*, and will be 236 feet long, 21 feet wide, and have a speed of about 19 knots.—News item.

Aircraft Construction

Nearly all of the 300 *F11F-1F Super Tiger* jet fighter aircraft (MR, Jul 1958, p 63) planned for the Japanese Air Self-Defense Force will be built in Japan, and the United States aircraft industry is scheduled to build only a small number of the total. The final aircraft in this production plan is scheduled for delivery in 1964.

The United States *S-55* helicopter has been licensed for construction in Japan. This helicopter also is produced in France and England. The first Japanese-built helicopters will be for the Self-Defense Force with later production scheduled for commercial usage.—News item.

WEST GERMANY

Allied Law Expires

The postwar Allied Occupation Law banning the Nazi Party in Germany has gone out of effect and has been declared void. The occupation law has been replaced by constitutional provisions outlawing any movements against the democratic order. —News item.

BRAZIL

Engine Plant

A factory at Camp Limpo, in the state of São Paulo, will produce forged automobile parts such as axles, gears, and camshafts. Production of the new plant is expected to reach 30,000 tons per year. The factory also plans to produce diesel motors.—News item.

PAKISTAN

Warship Received

The British destroyer *Creole*, renamed *Alamgir*, and the last of five vessels purchased by Pakistan from Great Britain, has been delivered to the Pakistanian Navy. Refitted and modernized, the *Alamgir* displaces 2,560 tons fully loaded and was designed for a top speed of over 36 knots.

Armament consists of three 4.5-inch and six 40-mm guns, four 21-inch torpedo tubes, and two *Squid* antisubmarine mortars.—News item.

PHILIPPINE ISLANDS

Vessels Received

Four seaward defense boats (SDB) have been presented by Australia to the Philippines. The vessels have been stationed in Hong Kong on loan to the British Navy for local defense duties.

The 72-foot-long vessels, which displace 54 tons and have a speed of 12 knots, will be transported from Hong Kong to Manila by the United States Seventh Fleet. —News item.

SPAIN

'Super Sabres' Arrive

Supersonic *F-100 Super Sabre* jet fighter bombers are now flying protective cover for Strategic Air Command bases in Spain. Other United States aircraft flying missions from Spanish runways include *B-47* bombers and *F-80 Sabre Jets*. Plans are that the First Tactical Fighter Squadron, which operates the *F-100's* in Spain, will be replaced by another squadron after a six-month tour.—News item.

TUNISIA

Army Increase

It is reported that the Tunisian Army, currently at a strength of 6,000 men, is planned for an increase to a strength of 18,000 in the near future.—News item.

MILITARY DIGESTS

Soviet Seapower -- Soviet Escort Forces

Digested by the MILITARY REVIEW from a copyrighted article by J. Meister in "The Navy" (Great Britain) November 1957.

THE main danger to the Soviet Navy may come from allied task forces with large aircraft carriers, from which H- and A-bomb carrying aircraft can take off to bombard Russian industrial centers. The activity of allied submarines against Russian convoys will be another threat. Obviously, Soviet Russia's seaborne foreign trade, not very important in any case, will come to a standstill in case of war.

If one includes the satellites, Russia is almost completely self-sufficient and does not depend on imported raw materials. But the inadequate development of the Russian railway and road network forces a large amount of trade and traffic in supplies to make use of coastwise shipping as the Germans did during the last war from the Spanish border to the North Cape.

The most important of all Russian lifelines lies in the Caspian Sea where the oil from Baku is shipped to Astrakhan and from there up the Volga to the industrial areas.

Besides local coastwise shipping, the Soviets also must supply garrisons and bases in such outlying places as Novaya Zemlya, the North Siberian islands, Sakhalin, and Petropavlovsk. Much can be done by aircraft, but certainly not all; fuel oil, for instance, must be carried in tankers.

Finally, there will be large commitments to supply Russian armies which may have undertaken amphibious operations against Turkey, Japan, Iceland, Denmark, and Sweden, for example, and in the Arctic.

All these convoys form ideal targets for allied attacks with surface vessels, aircraft, and submarines. The amount of damage which might be done by surface ships and aircraft depends largely on the efficiency and strength of the land-based Soviet Air Force, and, therefore, will not be further analyzed. The possibilities for allied submarines are easier to estimate.

The NATO powers at present have over 230 large and 85 coastal submarines, while another 30 boats are being built. If one-fourth, or about 80 submarines could operate simultaneously against Russian convoys, Soviet merchant shipping losses soon might reach very high figures and ultimately cut the supply lines between the homeland and isolated outposts or advanced armies. Russia does not have much experience in convoy defense.

In every major war her foreign seaborne trade has collapsed immediately,

and only some form of blockade-running has continued, as during the Crimean War. In the First World War even the trade with Sweden from ports in the Gulf of Bothnia was sometimes menaced by German action; and although two Russian cruisers were stationed at Vladivostok, the German cruiser *Emden* was able to attack Russian shipping right outside this port.

In the Second World War Russian military traffic and short-distance supply convoys were somewhat better protected; and the convoys which the Soviets ran during the autumn of 1941 between Hangö, then under siege, and Kronstadt were fairly successful chiefly because the Germans and Finns had no fast powerful warships available at the time.

In the Black Sea the Soviet traffic in military supplies to Odessa and Sevastopol in 1941-42 was subjected to Axis air attack only, and this traffic always was strongly protected. There often were several destroyers and small craft for one single freighter.

But in the summer of 1942 the Soviet Navy felt unable to attempt the evacuation of the remains of the garrison of Sevastopol. In 1943, when the Russians landed near Eltegen on the Kerch Peninsula, the naval forces—under the orders of the then commander in chief of the Soviet Navy—were again not prepared to protect the supply lines of the landed troops who were blockaded by the Germans. After one month of heavy fighting the Russian bridgehead was destroyed. This failure cost the Russians over 100 ships and 10,000 men.

Allied naval officers were doubtful as to the efficiency of the Soviet destroyers and escort vessels which participated in the Murmansk convoys. These judgments were confirmed by the results of Russian antisubmarine warfare. Of the eight German submarines destroyed by the Russians between 1914 and 1917, six fell victim to Russian mines, one to gunfire, and one to an aircraft. Strangely enough the war of 1941-45 produced almost the same figures, five German submarines mined and three sunk by gunfire and depth charges.

Of the 15 Axis submarines in the Black Sea (three Romanian, six German, and six Italian pocket submarines) only one Italian pocket submarine was sunk by Russian motor torpedo boat attack while in port. Soviet antisubmarine equipment and tactics were very poor. In the Black Sea, for example, they had only one submarine chaser with sonar; she soon was identified and then systematically hunted down by the German submarines.

Later in the war the Russians received almost 200 American lend-lease antisubmarine vessels, from frigates down to patrol launches; and while using this modern material—most of which has since been handed back or scrapped—the Russians may have improved their methods.

The torpedo boats of the *Shtorm* type, built before the war and the first surface vessels constructed by the Soviets and originally designed for escort purposes, now are serving as training vessels. The bulk of Soviet escorts at present is made up of 10 wartime-built torpedo boats of the *Bird* class, about 200 units of the *Artillerist* and *Kronstadt* types, and several hundred launches of *MO* and similar, but more recent designs.

After the war Soviet Russia obtained seven German destroyers and some smaller escorts, five Italian destroyers and torpedo boats, and 24 Japanese escorts; but all these vessels either were worn out, slow, or only intended for coastal work. The Russians needed a fast, modern escort ship, not oceangoing, but able to work in all weather everywhere off the Russian coasts.

For these purposes they have recently

built the 900-ton *Kola* class and the 1,200-ton *Riga* class vessels which have elaborate radar installations, although the antisubmarine and antiaircraft armament seems somewhat weak. It is interesting to note that these new escorts still have a few torpedo tubes which probably are meant as a deterrent against eventual attacks by allied surface forces.

Altogether, Russia today may have almost 100 large and several hundred small escort vessels, submarine chasers, and patrol launches, 400 of which are said to be in the Baltic. Compared to prewar days, therefore, the situation has improved both in types and in numbers. But owing to complete lack of any real experience of submarine hunting on a large scale, and of handling of convoys under heavy and repeated submarine attacks, this remains one of the weakest spots of the Soviet Navy.

The Soviet and satellite merchant fleets of about four million tons would not last long under heavy allied attacks, and the loss of several hundred thousand tons per month soon would cripple the Soviet supply system. The shipbuilding capacity of Soviet Russia, especially when under heavy air attack, would be completely unable to replace losses.

If the allies also were to find means to destroy Soviet tanker tonnage in the Caspian Sea by air attacks, mines, and perhaps other weapons, Russia soon might be deprived of her main supply of oil, and find herself on the surest and fastest road to losing the war.

The more submarines the NATO powers have available, the bigger are the chances that the Soviets will realize that they cannot win a third world war, and the bigger, therefore, are the chances that this war will not start.

Maneuver

Digested by the MILITARY REVIEW from an article by Colonel de Boissieu in "Revue Militaire Générale" (France) October 1957. Translation by Mr. LaVergne Dale, Leavenworth, Kansas.

IN CONSIDERING the initial battle of a conflict, Marshal Foch rejected the a priori maneuver—the maneuver conceived, that is, before the opening of hostilities. According to the Marshal, the a posteriori maneuver, the decision based on the elements stemming from a direct contact with the enemy's forces, constituted the surest recipe for victory. Profoundly a man of action, it was in action itself and in contact with reality that he believed the battle should be shaped.

Before 1914 this concept was also that of the French commanders invested with the heavy responsibility of command of our armies in time of war. Even though Joffre elaborated the famous Plan 17, in his mind this plan constituted the concentration and groupment of forces rather than that of the battle itself which he reserved for conduct in accordance with events. Profiting to the fullest extent possible from the latter, and having relegated his initial plan to the library for historical documents, he won the Battle of the Marne. Moltke, on the contrary, placing his confidence in the Schlieffen Plan, was not able to adapt it to the existing circumstances and, in spite of initial successes which, perhaps, contributed to deceiving him, experienced a serious check which weighed heavily on the outcome of the war.

In an era when the mobility of armies on the battlefield was that of the man on foot, there was nothing astonishing in the fact that a commander in chief had the time necessary for the adaptation of

his maneuver to that of his adversary before the final decisive action. In other words, the tempo of the battle was still sufficiently slow for the veil, which always hides the enemy's intentions, to be lifted soon enough to permit defensive measures to be taken.

World War I

Nevertheless, in 1914 the enormous masses of forces which had to be moved, and the employment of the railways for bringing them together made the elaboration of a somewhat rigid transportation plan necessary. Conceived on the basis of an initial disposition, this plan imposed on the commander in chief a decision with regard to the future maneuver while still in time of peace. To be sure, variants were still possible but they could only be changes of small magnitude and consequently of little influence on the concept itself.

However, on the part of the defender at least, the disposition resulting from the concentration, of necessity, had to possess the flexibility necessary for covering several hypotheses.

In short, a rigid transportation plan terminated in an initial disposition which, due to the still characteristically processional tempo of the battle, could be modified in accordance with circumstances in all cases before it was too late.

World War II

In 1939 the case was different. We shall exclude the Polish campaign because the disproportion of the opposed forces makes it impossible to draw conclusions of any value in the subject which occupies us. As for the Franco-German hostilities, they did not really begin until May 1940. A passive period of eight months preceded the concentration for the first battle, thus giving the belligerents all this time for modifying their initial dispositions—which had not been anticipated by their transportation plans.

On their part, the Germans began their campaign in 1939 against the Franco-English forces without a maneuver plan. It was only after the Polish campaign that they occupied themselves with the matter and finally adopted the one which gave them victory. But their maneuver, conceived after the beginning of the war, benefited from their perfect knowledge of the enemy's disposition, study of which had led them to foresee the entry of the Allied left wing into Belgium.

On the contrary, on the French side a plan had been prepared in peacetime. Several variants were provided for, but these affected only the range of the advance of the wheeling flank. In spite of these variants, therefore, only a single maneuver was planned.

On 10 May, the two camps passed over to execution. On the German side everything developed as planned and even better than anticipated. The plan was executed with a speeding up of its schedule as its only notable modification. The high command scarcely had any occasion to intervene.

Inversely, on the part of the Allies, had the enemy's possibilities been poorly studied or underestimated? It makes little difference: the inevitable occurred. When the high command became aware of the German maneuver, it was unable to ward it off effectively. Surprised by the amplitude of this maneuver and by the rapidity of the enemy's advance, still reasoning on the basis of the experiences of World War I, it was paralyzed and, properly stated, "knocked out."

Thus on both sides—a very unusual example—a plan was executed without any real modifications and, of course, the better plan brought victory.

Could it have been different on the French side? Could an effective defense have been found? Naturally, the rapidity of the penetration of the German tanks left little time in which this defense could have been put into effective opera-

tion. Some of the German chiefs, among them Von Manstein, expected the French to reply to their maneuver by a maneuver of their own. They looked for them to launch powerful counterattacks, one of which, resting on the Moselle, would be oriented toward Bonn, while the other, covered by the course of the Meuse, would be aimed at the Brussels region.

The example of the beginnings of the two last world conflicts confirms the concept of Marshal Foch and in both cases defeat penalized the chief who placed too much confidence in a plan which was not adaptable to the realities of the battlefield.

Future War

In a future conflict would it still be this way?

Essentially, everything depends on the form of this conflict. We shall speak here only of the case of an atomic war.

In such a case it is probable, if not certain, that preceded or not by a period of political tension, the conflict will begin with a powerful atomic exchange which, perhaps, will be decisive with respect to the outcome of the war. One cannot, however, exclude the possibility of a simultaneous or subsequent air-ground struggle. Whether this occurs or not, the ground battle will not be of more than secondary importance with respect to the atomic battle, and that is why we shall study the latter first.

There is little doubt that the side which, at the conclusion of the nuclear exchange, will have succeeded in retaining a certain stock of nuclear weapons and the means for launching them will emerge the victor, while his antagonist will have exhausted his potential. In case that the two adversaries should emerge from the struggle with all of their means of action exhausted it is difficult to foresee what would happen. However, this kind of "draw" seems hardly probable, and each of the adversaries desiring that the atomic battle should be decisive, will attempt to avoid it at all costs. No one will still be able to hope for victory over an enemy who alone possesses nuclear weapons in any considerable quantity.

In order to take advantage of surprise which is the capital factor of success, there is a strong risk that the enemy attack will be unexpected. The reply must be instantaneous and, therefore, automatic. It is easily understood that when the first enemy bomb explodes there will no longer be time for even short reflection as to where and how to make the reply.

Planning

It is obvious that in time of peace this reply must be the object of a plan worked out in full detail and constantly kept abreast of the times. The most unimportant person assisting in its execution must know his part, taking account, of course, of whatever secrecy is needed.

The elaboration of such a plan is not an easy matter. First of all it supposes an exact knowledge of the objectives to be combated and, as a corollary, a perfect intelligence organization. After this the selection of the objectives which will be attacked first must be made—a delicate choice on which success or defeat will depend. After this choice it is still necessary—assuming there is available all the matériel necessary (bombs, planes, and other equipment)—to decide on the air deployment that will permit attainment of the objective. To be of worth and not too vulnerable this deployment must be as largely dispersed as possible which, in the atomic age, means over the entire expanse of the globe, thus the necessity for numerous bases. This short résumé shows the way the interlinked problems will be posed by the elaboration of the contemplated plan. Military problems of pure aviation technique, and diplomatic and financial problems also will enter into the picture.

What appears certain is that the aerial atomic battle, once unleashed, will leave little place for the maneuver. From this point of view and because of the fact of the primacy of the air battle, there is a complete change with reference to the preceding world conflicts.

The Ground Battle

In a recent article on "French security," Marshal Juin wrote:

Today, with this threat of general paralysis which the employment of nuclear weapons causes to hang over the ensemble of the territories attacked, can one logically conceive that it will still be possible to compromise between permanent protection at the anticipated place of action and the means subsequently to be mobilized for progressive reinforcement? There would be a real danger in again basing our hopes on the resources of mobilization for constituting the greater part of the shield, as transport concentration could be the cause of many miscalculations. These shielding ground forces constantly must be kept in readiness for action. It is unthinkable that they should not have permanently in their possession all the means necessary to them or that they should not already be at the place of action at the moment of the attack.

Such forces must be at the place of action at the moment of the attack and, at all times if we assume that the surprise may be total. This is tantamount to saying that it is necessary to choose, a priori, the line on which it is desired to halt the enemy advance, and mass the troops charged with holding it in its immediate proximity. This is a prudent solution in the face of the threat of the general paralysis spoken of by Marshal Juin, but it must be recognized as a solution that reveals the disposition and because, in this way, as did the Germans in 1940, the enemy is able to adapt his plan of attack to it at his leisure. Of course, only an initial disposition is meant here. If the circumstances are more favorable than anticipated, particularly as regards movements, this does not exclude the maneuver. But with the doubt that prevails with regard to this matter and with the complete uncertainty relative to the effects of the atomic battle, it would seem utopian to be able to foresee, before the opening of hostilities, what this maneuver may be. What will the losses be? What will morale be? Will the troops retain any combat worth? Many unknowns, added to the feared paralysis, make such foresight impossible.

In the terrestrial domain, contrarily to the aerial domain, a plan (in the sense of Plan 17 or the Schlieffen Plan) cannot be drawn up. Nonetheless it is true that before the conflict there is a grave decision to be made relative to the choice of the barrier position, because in reality it is here that the ground clash possibly will occur.

It seems that the conditions of a future war no longer make it possible to accept the views of Marshal Foch relative to the a priori maneuver, and that in the case of the initial battles both on the ground and in the air, the real maneuver must be executed in time of peace. When the war breaks out it is too late. It is already won or lost on the basis of the disposition that has been effected, the plans established, and the matériel in service.

Responsibilities

It may be asked whether under these conditions, which affect tacticians to a greater degree than strategists, it is not well to confide the responsibilities of command to organizers.

Let us be careful not to believe such a thing. In order that the immense machine which is to carry destruction to the adversary operate effectively at the desired moment, and in order that its "production" always be adapted to the conditions of the moment, an especially advanced

and dependable organization is required.

Likewise, it is necessary for the responsible chiefs to possess the uncommon qualities of clearsightedness, diplomacy, and authority, which in all eras have marked the great strategists.

Clearsightedness, or even foreknowledge, is vitally necessary for the responsible chiefs must prepare in the intervening years to have the matériel best adapted to a future conflict at the desired time. To be in service in the armies, this matériel requires considerable periods of preparation—periods which usually exceed those of the duration of the conflicts. To put it another way, the matériel made use of during a war is usually that which was conceived in time of peace. The German Army paid dearly for the lack of foresightedness of its leaders, who had not given thought to the landing matériel necessary for an invasion of England nor to the equipment needed for a winter campaign in Russia.

In this domain the least delay in a decision can be fatal, because it will give the adversary an irreparable and decisive technical advantage.

Diplomacy is especially needed in a coalition such as NATO, for many authorities must be convinced of the value and reliability of the bases on which their plans have been worked out, and many statesmen must be persuaded to conclude the agreements for obtaining bases considered as indispensable.

Authority is the balancing power which imposes on all a common concept.

Even if the responsible military leaders may have only more or less to make their action felt in the initial battle of a future conflict, they will be obliged to effect many "maneuvers" before the unleashing of hostilities to forge the instrument which will be confided to them—to organize it and effect its disposition with a view to certain and incomparable effectiveness.

However, using the word in its broadest sense, one cannot say that there is no longer any maneuver, but only that it occupies a different place in the over-all scene. From the strictly military domain, it has now passed over to the political, economic, and financial domains. Reserved yesterday for the period of war, it now extends into the period of peace. This evolution—the result of the advent of the nuclear weapons—is to an equal extent a logical result of the disappearance of a clear separation between time of peace and time of war.

Alongside this evolution of the maneuver, an evolution of the character type of the military leader must take place.

The Military Leader

More than a profound change in the qualities required of the military leader, the new conditions of war demand new qualities which, far from replacing the old ones, add to them. On the strategist, which he was and which he must remain, must be superimposed a shrewd statesman, a good economist, and an unequaled organizer.

We arrive, therefore, at the apparently paradoxical conclusion that the more war tends toward the "pushbutton" type, the more will eminent men combining an ensemble of exceptional qualities be required for its conduct. Among these, the quality which has always marked the great chiefs—character—will be indispensable to a greater degree than ever. As a matter of fact, the same logic that indicates the prime importance of intelligence, diplomacy, and shrewdness in the preparation for the conflict, also indicates that at the moment of atomic "cataclysm," it would require stern character on the part of the responsible personages to maintain their equilibrium and clarity of vision, to make accurate decisions in the face of devastating enemy action and, finally, to win.

The Ethics of a Soldier--General Ludwig Beck

Translated and digested by the MILITARY REVIEW from an article by General Hans Speidel in "Revue Militaire Générale" (France) March 1958.

THE problem of relations between military leaders and civilian government officials presents itself just as constantly in time of peace as in time of war. The training of these men, their traditions, and their outlooks are so different that history normally records both their labors and their differences. Such can be seen in the case of Clemenceau and Foch, whose level of thinking and ardent patriotism are above suspicion.

Permission has been received from General Speidel, Commander of the Ground Forces Central Europe, to publish a condensation of his study on General Beck, a bitter enemy of Hitler who killed himself after the failure of the 20 July 1944 conspiracy.

* * * * *

Ludwig Beck ranks among the great Germans. He is worthy of a place in history, not so much as a military leader whose name is connected with battle victories, but rather through his spirit and bearing.

Born on 29 June 1880 in Biebrich on the Rhine, Ludwig Beck grew up with his two brothers on his parents' estate. He received a liberal arts education, and in the spring of 1898 joined the 15th Artillery Regiment garrisoned in Strasbourg. The choice of this location was of great importance to the young officer. Alsace seemed to him a kind of bridge between Germany and France. He became profoundly convinced of a necessity for understanding and permanent friendship between the two countries.

Through his entire life he cultivated a thorough knowledge of the French language, literature, and history. His studies of his great opponent, Marshal Foch, give proof of this. He once wrote of Foch:

A German officer should always admire the figure of this great soldier by whom we were finally forced to admit ourselves defeated.

On his final visit to France in June 1937 he tried, for the last time, to bring about peaceful Franco-German understanding, conferring to that effect with French leaders including Marshal Pétain, General Gamelin, and the Minister of War Daladier. Hitler was opposed to this and nullified the work of his chief of staff.

In the First World War the young officer was assigned to duty both with troops and with the general staff.

Fight Against Hitler

Between the wars Ludwig Beck rose to be the chief of the general staff which, under Hitler, was not to be considered "the most desirable military position" any more.

On 2 August 1934 he had a great conflict with his conscience when the Minister of the Reichswehr ordered the army to pronounce the oath of allegiance to Hitler. He regretted later that he had not availed himself of his right to retirement at that time, after his efforts failed to preserve the peace and to moderate the policy of violence embarked upon by Hitler.

The day of his retirement, 31 October 1938, he began his fight against Hitler. He was the intellectual pole, the uncontested leader of the German resistance movement, the secret Germany. When the 20 July uprising failed he ended his life.

In their memoirs Paul Fechter and Edward Spranger tell of Beck's appearances at the Wednesday meetings.

The best features of the face were the eyes, which shone with a charm of a humane warmth. He did not seem like a mil-

itary man but rather a scholar whose profession had led him to a special branch of strategic thinking. He refused to discuss his former life—I have also hardly ever heard him say anything about or criticize the General Staff. Rather in a few words he gave a picture of Dietl and Rommel that showed their personalities and their true capabilities. One was often really aware of the silence that he had imposed on himself and that he kept in spite of his friendly honesty.

The even, harmonious personality of Ludwig Beck rises before our eyes. His great calm and fairness were combined with humane tact, unselfishness, and courage. He knew no fear of man, only fear of God. In public appearances he shunned the limelight and the glory, the questionable value of which he was fully aware. Among people of his same opinion he was like "the sun that shines and warms even if it does not talk" as Mathias Claudius said.

Through the bitter experiences of life he learned to solve all problems alone and without the help of strangers; therefore, he could quietly influence people to whom he did not feel close and from whom he instinctively kept away. Although he seldom mentioned it, he drew his strength from his religion and his talks with God.

He was a great gentleman in all respects and so well-bred that to many he seemed outdated. He stood against injustice and the impropriety of the times without compromise. He was deeply disturbed about the condition of the Third Reich, especially under the rise of Hitler. Out of a revolt of his conscience came his decision for resistance and action. The saying of Theodor Heuss especially applied to Ludwig Beck: "The legacy is still powerful, the obligation is not yet redeemed."

Soldier and Man

In Ludwig Beck the man and the soldier cannot be separated.

Beck considered the ideal makings of a soldier to be the combination of a peace-loving but fighting spirit with the knight-like understanding of all that is good. Because of this he could, at the start, still see things with the eyes of Clausewitz even when the frontiers were being penetrated. His character and conscience kept him from partaking in the highest circles of leadership during the last war.

To all organizational questions, as chief of the general staff, he gave the Scharnhorst guidance "The organization itself is stagnant water, only through the inner life and the inner strength can it be of any value."

His contribution to the training and education of men and soldiers remains timeless in its value and example for the future, because he did not limit himself to the small orbit of the soldier. *War is an art, one based on a scholastic foundation and resting on a free and creative activity* wrote Beck in 1932 as a preamble to the Field Manual on *Troop Leadership* which was used and followed throughout the German Army. This also points out the influence that Beck's ideas had on the armies of the United States, Turkey, and the Soviet Union.

As an educator he possessed an unusual gift of teaching, which showed up not only in the early schooling of the young general staff officers chosen for the highest leadership, but also in the maneuvers and the operations of war games.

Plans and operations schooling especially were close to Beck's heart as chief of the general staff. Through his ability, disciplined thinking, and profound knowledge, he solved problems of the highest military level.

The Philosopher

His philosophy was that strategy and operational plans are applicable not only to the strictly military field but extend also to the field of politics, economy, international law, and mass psychology. In 1939 Beck wrote to me:

Germans who know only the military decisions cannot, unfortunately, form any true idea of the kind of war these people (the Nazis) intend to make. In the present war, military weapons will play only a secondary and accessory role. The main effort will be made in other fields. My viewpoint on these things and my predictions for the future remain unchanged. Let's hope that I am wrong.

He had guessed correctly.

In his strategic thinking Beck had the foresight that Napoleon looked for. "It is necessary to go ahead of events and not behind them." He had a gift of perception, the strength of his great knowledge, and a wealth of imagination.

Clausewitz once stated that "each operation must be led by a clear and simple thought." Beck also demanded a clarity in the judging of events, and crystal-clear, sober reporting. He had the bitter premonition that the fate of the Second World War would be influenced by the fact that all too often one would not dare to report the bitter truth with clarity. He often quoted Moltke's phrase "First weigh your chances, then dare." This led him to overemphasize the weighing at times. This also was noticeable in certain political decisions.

Whenever he could he fought the lack of unity—an inherited trait peculiar to the German people—and illustrated it with examples of differences between military leaders that dated from Cato and Scipio through François and Pitlwitz to Hindenburg, Ludendorff, and Falkenhayn. He pointed out again and again that unity can only exist if, as Moltke said, there is "complete authority and confidence." In his teachings he always placed emphasis on the French theme "to command is to convince."

The opportunity to see the effects of his leadership upon the troops was denied the high-ranking general, but his work as a regiment and division commander was known as an example to the small German Army. The junior officers and soldiers felt that their leader had the situation and people under control.

Ludwig Beck quoted from Verdy de Vernois on troop leadership. "The virtues of war take roots more in the character than in knowledge." As he was a student of French literature he expanded his theory with the words of Albert Sorel's "Character is more important than courage as it is the steadiness of heart and intellect that hold up courage and conquer destiny."

He always asked for understanding of heart, will, and character. "Not seen but existing," he knew the importance of a field marshal's remaining a human being and the especial need for maintaining a balance of knowledge and action. Beck never tired of his task of forming personalities and preserving their spark.

The Historian

Through his entire life Ludwig Beck was too busy to do the research into the history of war that he had longed to do. In June 1937 I accompanied him to the battlefields of the Marne, where the First Army fought. He spoke at that time of the need of revising the records of the Reich's archives, on which he hoped to be able to work himself. He agreed with Scharnhorst on the need for research. "Never ceasing activity and uninterrupted effort is necessary if one wants to make progress in science." An example of his skill as a researcher are his studies: "The Leader in War"; "Did Germany Have a War Plan in 1914?"; "East or West Offensive in 1914?"; "The 29th December 1918"; "Strategy"; and many others.

The relationships between the military commander and the political chief gave him food for thought all his life. He recognized, however, the precedence of the civil authority, founded on the prin-

ciple that "Every war contains its own law—and this law is the policy that orders it."

In private conversation he mentioned that he wanted to make a study of the relationship between statesmen and military leaders. The clash between Field Marshal Foch and Clemenceau is, unfortunately, only indicated in his studies of Foch. He had the same feeling about Ludendorff. He admired Ludendorff's greatness but he felt that there was a lack of the harmony and understanding that Clausewitz demanded. On the other hand, Beck considered Gneisenau, who was one of the founders of the General Staff, to be a genius, but Ludendorff, who copied Beck in everything, including strategy, possessed an overdemanding and disagreeable personality.

Most of all Beck always attempted to solve problems in a manner which would be best politically and militarily.

The life and teachings of Beck were based on the symbolic maxim of La Rochefoucauld "nothing endures without proper balance." This also was the maxim of Bismarck.

His Retirement

There are two apparent reasons which explain Beck's retirement.

He was one of the few who supported the Commander in Chief, General von Fritsch, who was removed from office by Hitler through intrigue and slanderous lies because he opposed Hitler's military policies. At Warsaw in 1939 Fritsch sought and found a soldier's death in the frontlines with his old regiment to which he had attached himself as an "observer."

He opposed Hitler's intentions with regard to Czechoslovakia, although he was not unaware of the consequences which would result for him personally and officially. It was his last open attempt to bring military reasoning to bear against the adventurous policy to which Hitler was committing the nation.

He then acted as Reinhold Schneider demanded of a true general:

A general is one who has the power of command, who is capable of doing what he does not desire to do not by order but on his own will, based on reason and sense of duty—he is neither a king nor a dictator—he is a knight like man, who elects his duty and is always ready to relinquish his office if it should demand that he be required to do something that is against his honor and conscience.

For only in that manner can a general remain true in spirit, have a clear conscience, and a strong character. Ludwig Beck did not let it end on that basis. He did not resign his office and retire out of stubbornness but in full recognition of his responsibility and the dictates of his conscience.

This great strength of character made him the intellectual center of a group who put the responsibility of their people's future above the deceptive gloss of a questionable regime.

It was in this manner that he joined with men of all walks of life united in a resistance movement for the good of Germany—from laborer to general—with Wilhelm Leuschner, Adolf Reichwein, Karl Heinrich von Stupnagel, and Claus von Stauffenberg.

Conclusion

In the dark of night Beck strode forth to fight for the freedom of an oppressed Germany—even at the risk of appearing a traitor. In the process he developed into a tragic being. The more he delved into the humanities the more he came to blows with his inner conscience and nobility. What up to now had just been resistance, developed into selfless action to save the people and the state.

Beck split with history: The act was initially made possible only when the re-

quired vigor was failing, but in his death on 20 July 1944 he was victorious, for his mission in life was to improve the education and spirit of the German soldier and the general staff. He lived up to the legacy of Scharnhorst, Gneisenau, Clausewitz, and Moltke. In addition Beck became an example of a German on whose untainted reputation a new Germany can attach herself after the complete collapse of the old regime. He died as a martyr for those ethical values which were to him more important than his career and life itself: Sowing for a better future.

Deception in War

Digested by the MILITARY REVIEW from an article by Lieutenant Colonel Miloje Sekulich in "Vojno Delo" (Yugoslavia) Nr. 4-5, 1957. Translation by Mr. LaVergne Dale, Leavenworth, Kansas.

DECEPTION—and by its aid, surprise of the enemy—always has been regarded as an integral part of the art of war. History attests that many military leaders have made use of deception, but few of them can be said to have become adept at it. To deceive an alert enemy is far from being an easy or simple matter. It requires not only intelligence, courage, resourcefulness, imagination, and an all-around knowledge of the science and art of war, but, in addition, a good knowledge of the enemy, his doctrine, and his intentions.

Both the weaker and the stronger sides make use of deception; the stronger in order to achieve victory somewhat more easily and with fewer losses and the weaker in order to make up for insufficiency of strength and means.

Secrecy

In order to be able to achieve deception it is necessary that the ideas, plans, and preparations with regard to the coming action be kept and conducted with utmost secrecy, for the less the enemy expects his adversary's decision and action, the more easily he can be deceived.

For example, in order to prevent the Nazis from learning the place and time of the invasion of Normandy, General Eisenhower ordered communications broken off between Great Britain and Ireland because the latter was maintaining diplomatic relations with Germany. He likewise limited the privileges of the foreign diplomats in London, and closely censored their communications. At the same time he forbade visits to the English coastal districts, where the concentration of troops was being effected, and the use of transoceanic telephone, telegraph, and radio communication means. The correspondence of all invasion forces was subjected to strict censorship.

The security measures which the Germans attempted to put into effect with the view to maintaining secrecy with regard to their so-called "Ardennes offensive" in the winter of 1944-45 are also instructive. Special guarantees of trustworthiness were required of all officers acquainted with the offensive, and radio communications on matters relative to the operations were forbidden. Furthermore, it was ordered that only trusted couriers could carry official correspondence. All flying west of the Rhine was forbidden to anyone having a knowledge of the planned offensive. The troops intended for the operation had to be brought to the concentration area at the last moment, and at night. In the meantime, all troops who were not of German nationality were moved away from the front.

If an action is not prepared secretly and kept secret, it is impossible to de-

ceive and surprise the enemy. In World War I the French paid dearly for the fact that both the operational plan of their April offensive of 1917 and all the preparations for it were not only universally studied by staffs but also were talked about openly, and written about in the French press. It was no wonder that the German High Command disposed its forces at the proper time and in such a way that the French attack struck nothing and ended in defeat.

Security

Both belligerents strive, with all the means at their disposal, to keep impending action secret, not only from the enemy but also from their own troops. Plans are worked out at headquarters and all reconnaissance is conducted by highly trustworthy personnel, with the view to ensuring at least a degree of secrecy.

At times it may be advantageous if even fewer persons are informed of what is being prepared. Thus the British, before the Battle of Cambrai in which they made mass use of tanks for the first time, kept the intended offensive secret, so that other than General Haig, only three or four persons knew of it. Even the French supreme commander did not learn of the attack until the eve of its execution.

To deceive enemy agents with regard to an intended offensive in the summer of 1916, Brusilov continued to grant leaves of absence to men and officers until the last week before the attack. Moreover, this decision was not made known by means of an order, as theretofore, but furloughs were canceled without explanation. Brusilov acquainted only his army commanders with his plans. This proved very advantageous and deception and surprise were fully achieved in the offensive.

The False Picture

The so-called counterinformational measures for the deception of the enemy include the dissemination of false information, demonstration attacks, diversions, dummy means and works, and various other ruses. All these measures have as their object the presentation of a false picture of one's own situation or possibilities to the enemy in order to cause him to react in a predetermined manner. The importance the Germans attached to deception during World War I is to be seen from the fact that they created a general staff in 1942 "for the delusion and deception of the enemy."

Misinformation—false rumors and data skillfully passed on to the enemy—has the objective of convincing the enemy of the existence of certain circumstances which possess no reality. Before the Battle of El Alamein, Montgomery, together with others in London, broadcast word that the British offensive in Libya would begin on the southern sector of the front. The German agents passed this information on to Berlin, and Rommel was hoodwinked. Actually, the offensive began 14 days earlier on the northern sector of the front.

The experiences of war show that it is advantageous to "palm off" well-thought-out false plans, radio messages, orders, and other military documentation on the enemy in such a way as to create the impression that they are genuine, and accidently disclosed. In this way the enemy will be deceived and the measures he will undertake will be inappropriate. In World War I, by the aid of false radio messages, British Admiral Beatty succeeded in deceiving the German Admiralty as to the whereabouts of the British Fleet. On the basis of this data, the Germans ordered their ships to put out into the open sea with none of them knowing it was for a battle off Jutland, where the British Fleet was really located.

Under some circumstances it is possible to deceive the enemy with false propaganda by arousing fear in him. Toward

the end of World War II false Nazi propaganda relative to the preparation of "a redoubt in the Alps" for a last stand was skillfully prepared, and the Allies did not learn that this "redoubt" was nonexistent until the conclusion of operations. It was of such significance, moreover, according to the German propaganda that in Eisenhower's own words it was really a wonder that the Allies found it possible to believe in its existence, and took it into account in their operational plans.

The acme of deceptive skill is seen in the creation of a fixed belief in the enemy's mind. This belief can be made so firm that even though he learns the real intentions and plans of his opponent, he still firmly believes the latter to be false.

History is rich with examples of erroneous convictions and self-deception. Stalin, in the spring of 1941, even in the face of the timely warning from Churchill, was of the opinion, even the conviction, that Hitler would not attack the Soviet Union. Another well-known example, quoting from an article by R. R. Glass and F. Davidson, "The Intelligence Service Serves the Command" is:[1]

The idea, the conviction, that was uppermost in the minds of the Commanders of the Hawaiian area, was that Pearl Harbor would not be attacked.

Demonstration Attacks

By means of demonstration attacks the enemy may be deceived and led to alter his situation in such a way as not to be prepared for operations in other portions of his front. By means of powerful counterattacks on the Ruhr River at the beginning of December 1944, the Germans succeeded in creating the conviction in the minds of the Allied Command that the idea of an offensive in any other portion of the front was not even worth considering. Nevertheless, the powerful German Ardennes offensive on the front, south of the Ruhr River soon followed. In preparation for the invasion of Normandy the Allied bombing was carried out in such a way that it appeared to the Germans that the landing was actually being prepared in the Dover Straits area. In order that the Germans should hold to this conviction, the *V-1* launching ramps located in the Calais area also were bombed. Moreover, even the attacks of the Allied aviation on important points in the immediate vicinity of the landing zone on the day before the operation were conducted in such a way that the Germans were not able to foresee the place chosen for the landing.

Demonstration attacks with a view to diversion may now and then be advantageous even though executed with minor forces. This is evidenced by the landing of a regiment of British marine infantry at Ostende at the beginning of World War I. This British diversion in the German estimation had imperiled the communications and rear of the imperial armies in France and contributed, to some degree, to the rapid German retreat from the Marne.

Feints

A significant place in the deception of the enemy, especially in the forcing of rivers and the execution of marine landings, is occupied by feint concentrations of one's forces and real and/or dummy means. By these the enemy's vigilance can be attracted to sectors of the front in which no river forcing operation or landing will be made, and the enemy will be led to an erroneous disposition of his forces and employment of his reserves.

The British in World War I, in preparing the breakthrough of a strongly fortified front in the neighborhood of the city of Cambrai, effected a "concentration" of their tank corps much farther to the north in the vicinity of Arras. In addition to the dissemination of false infor-

[1] *Vojno Delo*, 1955, p 5.

mation they made a change in the designation of the headquarters of their tank corps, and conducted a gradual, covered assembly of their troops, tanks, artillery, and other combat matériel. At a small station in the vicinity of that front, over a period of almost a month, a carload of tanks arrived every evening. It was not difficult to conclude that in the nearby woods a large number of tanks were being assembled and that obviously an offensive was being prepared.

Five days before the attack on Cambrai, terrific German artillery fire was laid down suddenly in the woods where the tanks were "concentrated." The Germans were convinced that they had destroyed a large number of armored vehicles. As a matter of fact, there was not a single tank in those woods.

In the World War II invasion of Normandy, by means of a misleading concentration of Allied landing forces and invasion craft on the east and southeast coast of England, there was created in the minds of the Germans the belief that the landing in Normandy was only a maneuver for distracting their attention.

Another interesting and successful case of deception was that effected by the American Ninth Army in World War II by means of a mock preparation for the forcing of the Rhine River. In order to deceive the Germans with respect to the place of the forcing operation, the Americans, in the sector where the actual forcing was to occur (near the town of Reinberg), conducted their preparations with the greatest secrecy. In the place of the pretended forcing (at Wirdengen) they established dummy dumps, built dummy roads, and in the daytime masked dummy matériel. The deception was so convincing that for an entire week after the execution of the actual operation at Reinberg, the Germans still looked for the main crossing at Wirdengen and kept their reserves across from it.

Dummy Works

Dummy means and dummy works have as their object the deception of the enemy with regard to the strength, location, and disposition of one's forces and matériel as well as with regard to one's intentions.

By the help of about 15,000 mockup horses made of rags and straw, British General Allenby, at the time of the Battle of Armageddon (in Palestine) in 1918, deceived the Turks. Dummy matériel for the deception of the enemy also was widely used in World War II. Before the Battle of El Alamein Montgomery ordered the construction of hundreds of dummy tanks and thousands of dummy trucks. He succeeded in deceiving the enemy as to the place of concentration of his armored forces and thereby with regard to the direction of the delivery of his main attack.

In the so-called "Kursk salient" the Russians led the Germans to false conclusions concerning the disposition and strength of their forces and drew the fire of artillery and aviation away from their actual positions by means of the construction of dummy positions with a large number of dummy objects such as trenches, artillery positions, observation posts, tanks, and planes.

New Ideas

In deception, new ideas must be conceived. That is to say, one dare not repeat any old, well-known means, methods, or procedures for the enemy may quickly and easily see through them and adopt countermeasures. In fact, if one wishes the enemy to be really deceived and, therefore, surprised, unusual means and methods *must* be employed. This is the best way to achieve major results.

Thus in World War I, in the summer of 1916, General Brusilov made use of a new method for breaching the fortified German-Austrian positional front. Up to that time a breakthrough of a positional

front had been effected only on relatively narrow sectors and there always existed the possibility, therefore, that the enemy would be able to bring in his reserves with sufficient promptness as well as a part of his forces from other portions of his front that were not under attack, thus localizing the breakthrough.

Brusilov abandoned the traditional pattern and decided to effect a breakthrough of the enemy front by means of simultaneous attacks on several sectors, or in several operational directions. He succeeded in producing maximum surprise of the enemy. The front was broken through in several places and over a great breadth and depth. The total result was that some 750,000 of the German-Austrian forces were killed, wounded, or taken prisoner.

The enemy, by means of unexpected and new methods of defense, may not only deceive his attacker, but also break his attack. At the beginning of July 1918, and a few days before the German offensive in Champagne, the French High Command secretly moved its troops from their first defense position to their intermediate position. By this unexpected procedure the French deceived the enemy and the German artillery laid down its artillery preparation "in a void."

Deception by Maneuver

Deception in offensive combat operations aims at giving the enemy a fallacious impression of the disposition of his opponent's forces and the time of the beginning of his operation. This also may be achieved by the execution of a maneuver. Deception of the enemy by means of a maneuver may, among other methods, be attained by a buildup of superior strength at a point where it has been ascertained that the enemy is weakest, with the intention of attacking here. When the defender has been pushed back, weaker forces are left in a conspicuous location in this sector and the remainder of the forces are moved to another point of attack. Thus the enemy is frustrated, deceived, and his forces scattered. This method of deception was employed by the Germans in their attempted crossing of the Lim River at the beginning of July 1944 at Bijelo Polje.

A maneuver across a terrain area, which the enemy considers to be difficult or impassable, likewise leads to the surprise of the enemy. An interesting attempt at the exploitation of such a terrain area occurred in the Yugoslav war of national liberation.

Disregard of the northwest portion of the ring of encirclement in the fifth enemy offensive on the part of the Germans can be explained on the basis of deception. As Niko Jovichevich said:

It looked as though the Germans, at least at the beginning, wished to lure our forces to this difficult terrain, firmly believing that they would block all its approaches for a while and annihilate us there.

Atomic Deception

There is also need for aiming at deception even under the conditions of nuclear weapons employment in modern warfare, for simulated or feinted actions, and dummy means to deceive the enemy can be of great advantage. Deception requires the exploitation of all possibilities, methods, and means—counterintelligence activity, demonstration actions, simulated concentrations, dummy works and dummy means, changes of combat procedures, and confusing maneuvers—as well as terrain areas of difficult traversability. In every situation one must think up particular ways and procedures which, together with the execution of preparatory measures, will lead to a somewhat more complete deception of the enemy and, therefore, to a somewhat more complete surprise and victory.

It should be noted that the employ-

ment of nuclear weapons in limited war, if such employment occurs, will offer great possibilities for deception. But even under these conditions of action an admixture of courageous and experienced veterans will be able to retain freedom of action, impose their will on their adversary, and, to a large degree, exert an influence to their advantage on the combat actions of the operations.

Administrative Flexibility

Digested by the MILITARY REVIEW from a copyrighted article by Lieutenant Colonel R. A. Barron in "The Army Quarterly" (Great Britain) January 1958.

IT IS a platitude to say that the interaction of administration with strategy and tactics of war has always been intimate, but the effect of one on the other over the centuries has varied widely from campaign to campaign, and war to war. At times in history, administration has done little to dictate the way in which a particular war was fought. The army of Genghis Khan, for example, fought as it liked, with complete freedom of maneuver because it lived on the land, it had weapons and means of movement which made virtually no demands on replenishment, and it had no concern with amenities or casualty disposal.

A Chinese author wrote of that army:

Wherever the Tartars went they never stayed, merely seizing what they immediately needed of food and clothes, and going on, carrying off only gold and silver. Keeping in mind the strict instructions of Genghis Khan, they traveled both night and day, with the shortest possible halts, hunting for Mohammed. In the inhabited parts they picked out the best horses and galloped off on them farther. Every horseman had two horses, and many had several. As they went, traveling at a gallop, the Tartars changed from one horse to another, and in this way they were able to travel vast distances in the 24 hours, appearing suddenly where they were not expected.

But such days are past, and in more recent history administration often has largely dictated the conduct of a campaign or war. Always, however, the winning of land battles has depended on the ability of the commander in the field to retain the initiative and to force the enemy units to conform to his plan for their defeat. To be able to do this, the commander must have available the arms and ammunition which are required for the actual destruction or overcoming of the enemy. He also must possess resources for the maintenance of the men and vehicles in his force. Finally, he must have the means of delivering all these resources to the areas in which he intends to fight his battles.

The resources to be provided for the commander have to be assessed in the light of many factors: the strength, tactics, and equipment of the enemy; the topography and general conditions of the theater in which the campaign will be fought; and, not least, on the ability to provide them. Today, when wars are fought across the oceans of the world, some reserve is vital for flexibility, but, even so, the scale of reserve holdings must always be carefully controlled. This ensures that the existence of large stocks does not, by their sheer immobility, result either in the lack of vital economy or the loss of freedom of strategic or tactical maneuver.

Without that flexibility, the operational plans of the commander must be correspondingly rigid, for his freedom of maneuver derives from his ability to provide the necessary resources, with the least possible restriction, at the time and place

chosen by himself. The greater the need for tactical mobility on the battlefield, the more disastrous administrative rigidity will be.

Furthermore, the means by which resources can be delivered to the fighting formations depends on the volume of the resources and on the physical characteristics of the vehicles by which they can be transported. The larger the volume of resources the more limited will be the choice of the means of transport, and the more rigid the administrative organization is likely to be; which provides yet another argument for the greatest possible reduction in the quantity of resources required to be delivered.

Therefore, whenever thought is being devoted to the problems of military administration the aim must be to improve flexibility. At a time of great transformation in the technique of war, in particular, this requires careful consideration. Such a time exists today with the nuclear weapon dominating all military thinking.

Administrative Complications

It seems probable that in any unrestricted war of the future land battles will be fought only on a limited scale, as a subsidiary to the immensely destructive, and probably short-lived, strategic nuclear struggle. Whether these land battles are fought only at the same time as the main nuclear conflict, or continue after the process of nuclear attrition is more or less exhausted, they almost certainly will be waged between relatively small formations. These formations must depend on great tactical mobility to ensure their survival against tactical nuclear weapons by dispersion, and at the same time enable them to concentrate speedily in order to engage and defeat the enemy ground forces.

Because of the destructive power of the nuclear weapon and the consequent possibility that individual formations may sometimes be virtually destroyed, strategic and major tactical mobility must be of greatly increased importance. An essential corollary of this general need for mobility must be a considerable reduction in the amount of equipment and other resources and of the weight of vehicles and weapons used by the forces engaged. This reduction will ease administrative problems; but the dispersion and tactical mobility of fighting formations will demand comparable dispersion and mobility of the administrative services, and must thereby increase the problems.

Any easement through reduction of resources is likely to be outweighed heavily by the complications imposed by the use of nuclear weapons on both the strategic and tactical aspects of administration. This weapon makes it only too probable that support from the home base virtually will cease from the start of a future war. Land forces will be dependent on the resources immediately available to them before fighting begins and on those which can be delivered from less vulnerable bases, and almost certainly by relatively restricted means.

At first sight it may appear as if the prepositioning of all the necessary resoures either in or within land communication of the potential zone of operations would provide the complete answer to this problem. However, any such solution presupposes infallible appreciation of all the areas in which the land battles will be fought and of the duration of the war; clearly this is impossible, and would be a disastrous basis on which to plan. Second, even in peacetime the process of equipping land forces is continuous as development proceeds; stockpiling in every imaginable overseas theater could not fail, therefore, to be progressively more cumbersome and uneconomical. Third, and perhaps more important, at the start of any war of the future the initiative must rest with the enemies of the democracies, and it will be vital that sufficient flexibility of development of the allied land forces shall exist

to meet threats as and wherever they may develop—complete reliance on prepositioned resources must deny this flexibility or be grossly uneconomic.

Thus it can be seen that some system of administrative replenishment, other than prestocking, is essential, although a certain amount of stockpiling undoubtedly will be necessary. It is clear that replenishment of supplies to overseas forces must be from bases which are dispersed against possible nuclear attack and located in areas least likely to attract such attack.

Of course, even in unrestricted war, there may be particular theaters of fighting in which for one reason or another the nuclear weapon may not be used, or may only be used to a limited degree. If this is so it will almost certainly be because of the undeveloped nature of the theater and the relative lack of worthwhile nuclear targets. Nevertheless, the very undeveloped nature of the theater will make economy of administrative expenditure, and flexibility of the means of delivery, little less essential than in the major theaters.

Furthermore, whatever the size and relative importance of the territory in which fighting is taking place, all supply machinery ultimately must stem from the main administrative bases which will remain possible targets for nuclear attack. Therefore, no distinction can be made in nuclear war between major and subsidiary theaters. The same type of administrative organization must serve for both.

Nor can consideration of future war be confined solely to that in which the nuclear weapon is used, because recent history has shown that there is an even greater chance of limited war, localized and relatively restricted in the scale of forces engaged. The administration for this type of war is, obviously, uncomplicated by the immediate threat of nuclear attack, but it is complicated by the fact that it must be superimposed on the normal peacetime economy of the country. It is one of the aims of the instigator of this type of war to cause as much disruption as possible to that economy.

It will almost always be true that speed in reaction at the start of this type of war will be of great importance if it is to be brought to a speedy end, and mobility and flexibility will be essential. Economy in military expenditure will again be important, but, above all, it is clear that an economic and flexible method of administration for the land forces, devised and prepared against the eventuality of nuclear war, cannot but serve equally well for limited war; in fact if it is to be in operation for the nuclear war it must exist in peacetime and must be practiced.

There is, in addition, the possibility that limited war may expand unexpectedly into full-scale nuclear war, and there is unlikely to be time or opportunity to change administrative systems then. Therefore, little is to be gained by any further consideration of the needs of limited war; the system for nuclear war must apply and can, of course, be augmented by more conventional means as necessary and desirable.

Administrative Resources

While the actual resources required by armies cover an almost infinitely wide range of items, the general administrative needs of future war demand the greatest possible reduction in their volume.

Any really significant reduction can be achieved only by the use of smaller armed forces which automatically make smaller demands on the administrative machine —such small forces will be an inevitable corollary of the tactical needs of nuclear war. It also can be achieved by simplification, standardization, and increased efficiency coupled with reduced size of all equipment; this again should follow from the reorganization and reequipment of field formations for future war. Lastly, it can be achieved by cutting out superfluous amenities and reducing consumable supplies such as food and water to the bare

minimum consistent only with survival.

All these steps must, in any case, be taken if the proportion of resources demanded by the armed forces is to be related to the over-all problem of maintaining supplies for the home country. As a result, a scale of administrative resources will be arrived at below which no reduction will be possible without jeopardizing the ability of the land forces to win their battles.

That considerable economies can be made when circumstances demand, even without the compulsion enforced by the nuclear weapon, was shown by the experience of the Fourteenth Army in Burma between 1943 and 1945, when the army proved that is was possible to fight on a scale of supply little more than a quarter of that normally accepted as standard.

There is another means of achieving economy which cannot be disregarded. Certain administrative services might be made common to the three fighting services, and thereby considerable economies in manpower and administrative demands would be achieved. This is a subject with wide ramifications and no short answer can be given, but every such amalgamation which may prove practical must be implemented in the interests of economy, and no amount of interservice rivalry or conservatism can be allowed to stand in the way.

Lastly, really worthwhile economy in administrative resources in the future depends basically on the design and production of new equipment. Until the land forces are reequipped with lighter weapons and vehicles designed to meet the conditions of nuclear war, only a fraction of the necessary economy can be made.

Administrative Distribution

Distribution in military administration includes the collection of all material resources from their places of production into depots where stocks are held in bulk, and their movement forward to progressively smaller and smaller installations until finally they are delivered to those who require them. It also includes the delivery of reinforcements and the evacuation of casualties or prisoners of war, which have normally followed the same channels.

Because railways, ships, and road transport have always been used when terrain and operational conditions would allow, ports, marshaling yards, and road centers invariably have been of great strategic importance. Only when these means and installations have not been available, or have been restricted, has use been made of less conventional methods, particularly of air transport; in this latter connection the campaign in Burma again supplies the best example.

Linked with the conventional means of movement has been a relatively stereotyped organization of administrative installations from base to forward units, and this organization, with only local alteration, has been applied whatever the means of movement. Even the increased use of airpower to disrupt installations or transportation in the past has seldom resulted in any radical change in the organization or means employed.

In nuclear war of the future, a far more critical problem will exist. With relatively limited air effort or, more particularly, by the use of long-range missiles, it will be possible to ensure complete dislocation, and even total destruction, of the most complex system of communications. More limited systems will be vulnerable to even negligible offensive effort. Large administrative installations, depots, and maintenance areas will be liable to the same complete destruction. Therefore, the delivery system must be capable of operating between dispersed maintenance installations which must be mobile, if they are to maintain essential flexibility and avoid constituting targets vulnerable to nuclear attack.

It is, in any case, evident that in nu-

clear war no reliance can be placed on any system that depends on major ports and centers of communication in the home base or in overseas theaters. It becomes necessary to seek means of delivery which will be independent of them. Railways must, therefore, be disregarded in any system of administration for future war, and the same will be true of all movement by ship which involves the use of major ports and all the loading and unloading facilities which only such ports can supply.

For movement across the seas the only choice available lies either with aircraft or with special ships which can be loaded and can discharge over beaches or at minor ports. Ships are best suited to the transport of all stores of great bulk, whereas aircraft provide greater speed of delivery but are limited by their capacity. Vehicles, and in particular tanks, are best carried by sea because of their bulk and weight; this will still be so even when reequipment for nuclear war results, as it must, in generally lighter vehicles.

Men with their personal weapons are best suited to air movement because the quicker they are moved the less uneconomic their services become. This is even more true of casualty evacuation, with the added requirement of providing the most comfortable and rapid transport to medical treatment. Between these extremes other items of supply vary in the extent of their suitability for one or other form of transport but can, in general, be moved by either means according to the needs of the moment.

POL Supplies

One aspect of supply, however, presents an acute problem peculiar to itself. Wherever the reorganization and reequipment of land forces may lead, heavy demands will remain for fuel oils and lubricants, and on them will depend the mobility of the land forces. Their provision must be secured in all circumstances. Unfortunately, the demands of fuel oils on bulk-carrying capacity are very large. In World War II the problem of strategic supply could be solved by conventional tanker delivery to base storage either in the United Kingdom or in the theater of war. From the United Kingdom, in the later stages of the war, fuel could be delivered by pipeline to Western Europe. In future war, base storage on any scale within the theater of operations, or close to it, will be impossibly vulnerable. The solution would seem to lie in providing small, fast tankers, capable of loading and discharging over beaches or at least without major port facilities, or in fuel-carrying aircraft. As an adjunct to the tanker ships the recently publicized idea of carrying fuel in floating "bags" towed behind offers possibilities.

Ships and Planes

The design of aircraft suitable for the general carriage of military resources is already well-advanced; their capacity and range of operation are increasing steadily, and, perhaps, more important, greater stress is being laid on their ability to operate from unprepared landing grounds. The construction of major airfields, with heavy requirements for materials and building effort, simply cannot be accepted in future war. Reliance on existing airfields likewise cannot meet the case, as they will not only be vulnerable to nuclear attack but by their immobility they deny the flexibility necessary for the tactical land battle.

The development of ships suitable for discharging over beaches or at ports with limited facilities is a less happy picture, particularly because—unlike load-carrying aircraft—they do not answer commercial needs in peacetime. Certain landing craft and ships exist which were developed during the war of 1939-45, but there are few of them and they cannot provide the capacity required for the full-time maintenance of overseas armies.

For delivery from stocks prepositioned

within land communication of the theater of operations, aircraft—and in particular helicopters—provide the most flexible means of movement, and the surest way of avoiding communication bottlenecks, but they will require augmentation by cross-country transport.

Finally, it is clear that if these special ships, aircraft, and road vehicles with cross-country characteristics are to be available at the start of a nuclear war, they must exist in peacetime. Therefore, they should be provided now as a matter of urgency and should be used for the maintenance of overseas forces in peace and limited war, although in either case the service which they can provide obviously will be augmented by more normal means of transport. Only if they are used before the nuclear war begins will it be possible to establish the organization for their control and operation; an organization which cannot be set up at short notice when the immediate threat of nuclear attack exists or after the attack has started.

It is also obvious that, if aircraft are to constitute a main channel of administrative support in a major war, the attainment of a favorable air situation could be critical to the survival of the overseas forces. This may not be achieved, at least at the start of the war, and it is, therefore, of the greatest importance that the aircraft developed for supply should have characteristics of speed and other means of self-protection sufficient to ensure a reasonable chance of their survival.

Strategic Administration

Strategic administration covers the entire system of supply and evacuation between the main production and base installations and the rear administrative echelons which are an integral part of field armies. It is a system which obviously increases greatly in complexity the longer the lines of communication between the main and forward bases.

Wherever future land battles may be fought, this added complexity will face the United Kingdom and the United States. It is less likely to affect our enemies, and it is, therefore, all the more vital that our system of strategic administration should be sufficiently flexible and certain to overcome this disadvantage, which goes far toward canceling any remaining advantages of our geographical position.

It has already become obvious that the nuclear weapon imposes a need for very great economy in the resources required by the land forces, and a requirement for means of delivery which are independent of major static facilities. The very characteristics of the weapon consequently help to create flexibility in the administrative machine, because rigidity springs largely from the holding of vast stocks and the use of strictly canalized lines of communication. On the other hand, this practical flexibility will be useless if the stocks on which the machine depends are not available.

In view of the vulnerability of the home base and of all conventional bases overseas, it is essential to arrange for adequate stocks to be available by their prepositioning at the least vulnerable strategic points. Such prestocking must be dispersed and must be as complete as possible in order that the disruption of any one base or group of bases shall not prejudice the war on land. This can only be answered by coordinated planning with those countries of whose loyalty there can be no question.

The more such stocks can be established in countries which are within land communication of probable theaters of operations the less the load which will be imposed on the necessarily restricted sea and air supply organization. Where this is impossible it may, for the proper security of the overseas main bases, be necessary for them to be sited considerable distances from potential theaters of war. This must be accepted, and the range of operation

of the ships and aircraft for delivery must be adequate to bridge those distances.

The organization of air transport requires only an expansion of well-tried arrangements. The organization of the logistic air support of the Fourteenth Army for the offensive through Burma in 1944-45 supplies a useful precedent. There, the British component—the "Combined Army Air Transport Organization"—of the Anglo-American Combat Cargo Organization "made a major contribution to the ultimate victory." That for naval supply might well be based on the Buildup Control System evolved for support of the Normandy landings in June 1944, although the reduced requirements for nuclear war should allow considerable simplification.

Tactical Administration

In the past, strategic delivery of resources has ended at the main overseas supply base, and distribution thereafter has been made by means at the disposal of, and under control of, the theater commander. In normal circumstances these means have embraced railways, inland waterways, pipelines, and road transport delivering forward in general to the army maintenance areas, then to corps maintenance areas, and finally to division maintenance areas, from which detailed distribution has been made to units and individuals. At some stage in the chain of delivery the less flexible railways and pipelines have been replaced by the road transport.

It has become clear that the overriding principle governing maintenance and movement in the field, under the conditions of nuclear war, must be the avoidance of major concentrations either in installations or in the channels of movement. Large depots must be avoided, and, in particular, stocks of any one commodity such as fuel or ammunition must be dispersed. The movement of supplies or reinforcements must no longer be canalized on the main lines of communication into a relatively few rail and road routes.

In general, such concentrations and narrow lines of communication have resulted in the past from the accepted administrative conception, based on the holding of large reserves at every level of command in the field—the scale of reserves increases the higher the formation. Truly immense stocks tended to be built up at army level or, more particularly, at the main theater base. Even at corps and divisional level the holdings were sometimes very large, particularly in preparation for the offensive. This inevitably led to concentration of installations and lines of communication in the interests of economy and control.

This picture of administrative support, in the form of an inverted pyramid, is bound to lack real flexibility and is quite unsuited to nuclear war. It must be replaced by a system under which reserve administrative stocks are held only at the highest level of support and are linked to formations by dispersed and unobtrusive delivery channels.

This system has been used in the past to a limited extent; for example, the maintenance of American forces in successive island campaigns in the Pacific. General Fuller has described the arrangements for these campaigns as they were organized by Admiral Nimitz:

> *. . . at one and the same time, his fleet had to be his base of operations and his striking force. . . . It was, therefore, a fourfold organization: a floating base, a fleet, an air force, and an army.*

The main, and obvious, drawback to what amounts to dependence on air or sea supply direct from an overseas base to forward formations is the possibility of interruption in the delivery of essential supplies through enemy action or bad weather. In the future, provided that the solution is always fully implemented and the light of the technical development of

ships and aircraft, this danger is unlikely to be so great.

The strategic prepositioning of stocks within land communication of the theater of operations, where such prepositioning is possible, will also obviously reduce the danger, at least for a limited time. But even when strategic reserves are not available, local tactical reserves must be held in the theater against any temporary breakdown of the supply machinery. Such reserves must be held dispersed as far back as possible at the level of the highest formation in the theater.

Any such individual system of supply to every formation in the theater will be very expensive in administrative units, and in ships and aircraft. But it must be remembered that the number of formations in any theater will be very much less than in the past, individual formations will be smaller, and administrative demands will be greatly reduced. It remains true that the elimination of reserve stocks at lower formations will go a very long way toward ensuring economy and toward making fighting formations truly mobile.

Tactical Delivery

The means of tactical delivery must serve for both the theater reserve, built up by prepositioning stocks and by subsequent supply, and for the direct administrative support of individual formations from the overseas strategic bases. For movement between the theater reserve and formations, sufficient aircraft and vehicles must be provided under the control of the highest formation in the theater. In the interests of flexibility and speed of movement, aircraft should be used to the limit of their availability.

Each formation which is capable of setting up a complete administrative organization should be allotted forward airstrips for administration; the number of such airstrips obviously depending on the scale at which air maintenance is being used. Mobile administrative units responsible for off-loading aircraft, temporary storage, and issue within the formation will be established around each strip or group of strips. The same organization can handle air delivery from the theater reserve and act as a receiving agency for supplies delivered by road.

The problem of sea delivery is by no means as easy because the gap must be bridged between the sea, or the beach, and the formation. It already has been suggested that lighter and less bulky stores could be off-loaded by helicopter load-carriers. There is no reason why these should not operate direct from the ship to the forward airstrip already established for supply by air. There remain the bulky and heavy stores, in particular fuel oils, which must be discharged onto the beaches. Their distribution can best be solved by the establishment of separate beach administrative areas for each formation and the holding in those areas of the appropriate storage, delivery vehicles, and issuing organization. In no likely theater of war are the distances from the available seacoast to the possible battlefield so great as to make this system impracticable. The Fourteenth Army in the Burma offensive in 1945 was maintained by road, rail, and river from the railhead at Dinajpur, 900 miles away. With comparative freedom of choice of beach areas, the distances involved in the future are unlikely to be greater.

Recently announced forecasts of future organizations suggest that the division will become no more than a tactical grouping of brigades which will constitute the basic fighting formations, and the administrative functions of the division will devolve on corps or the brigades themselves. This proposed reorganization is undesirable from the administrative point of view for it must result either in excessive grouping of installations and movement at the corps or, if decentralized to brigades, in a reduction of battle mobility. It seems more logical to retain the division in much

its present form and to eliminate corps as an intermediate formation between divison and army; for which there is precedent in many foreign armies. However, the future administrative system must operate to the lowest possible formation which can establish a full administrative organization without prejudicing battle mobility; that is, corps or division according to the pattern of future reorganization.

Every such formation, and every superior formation, will be provided with a beach maintenance area into which deliveries of all forms of equipment and supplies will be made by special supply ships from the overseas base. These beach areas will form the rear echelon of the administrative machine and will consist of special unloading units, storage units, and aircraft and transport delivery units.

The beach groups of the last war provide a useful basis on which to plan this organization. From the beach area, all sea-delivered resources will be carried by air or land transport to a formation administrative area centered around one or more airstrips, to which all solely air-delivered resources including personnel will be directed, and to which road delivery will be made from the theater reserve administrative area.

Medical Organization

Formations in the field must be able to call on medical units at all times and there can be no suggestion of altering their present intimate integration with one another. Furthermore, in nuclear war there are likely to be increased numbers of casualties compared with previous wars, and there will remain the same requirement to return rapidly to the firing line as many minor casualties as possible. This will be particularly vital because normal reinforcement will be difficult.

On the other hand, because of the operational conditions of nuclear war and because of the type of nuclear casualty that may be in the majority, there will be every advantage in rapid evacuation of serious casualties to medical units well clear of the battle area. In particular, it will be important that the need to hold and care for casualties shall not impede the mobility of formations. To provide the necessary rapid evacuation, the administrative system suggested for supply and delivery is well-suited.

Forward medical units would be established in the administrative area, and in these units minor casualties would be treated until returned to duty. Serious casualties, particularly those suffering from the more serious nuclear effects, would be flown to the theater administrative area or to the individual formation beach administrative area. There they would be treated in larger medical establishments or evacuated direct to the main strategic base.

This movement would be carried out in returning supply aircraft or helicopters. Parenthetically, there seems little object in any concern regarding "Red Cross" protection for these aircraft, as with nuclear weapons target discrimination will be impossible. The use of helicopters in the Suez crisis for casualty evacuation showed clearly their great potentiality for this purpose.

Maintenance

The repair of equipment presents a more difficult problem, but if economy in administration is to be made and the mobility of fighting formations is to be increased, some alternative must be found to the present cumbersome repair organization. Some simplificaton, and consequent improvement of mobility, will result automatically from lighter and more standardized equipment. But this will not suffice; and, again, flexibility can only be achieved by moving those installations which must be relatively static to the rear. The answer seems to be that field formation workshops should be small and genuinely mobile, and that in order to keep them so

they should carry out only minor field repairs or component replacement.

Components or complete equipment should be evacuated to the beach area, main strategic base, or theater base, for more extensive repairs, using the same transportation with which replacement items were delivered. There, major repairs would be carried out, but the repair organization in the beach area or the theater base must never be allowed to become overcumbersome and immobile.

Forward Distribution

With these two requirements met, there remains only the question of delivery and collection between the forward administrative area and the units of the formation. For this there seems no reason to make a fundamental change in the broad existing organization and system, except that the vehicles employed must have good cross-country capabilities and speed. There will be fewer of them because of the general severe reduction in forward holdings and because of the smaller formations which will be adopted for nuclear warfare, but they will have to operate over much more dispersed areas and will need to move away from roads to the units which they serve.

Administrative Control

It is clear that if it is to be genuinely flexible and reliable the entire system of administration must be adequately controlled. It may be spread over considerable distances and the forward termini of delivery and evacuation may move rapidly. Also, even though delivery will be made to each individual formation, demands on the strategic base must be centralized if the proper allocation of resources is to be made. Demands for all supplies and reinforcements should be channeled in the normal way to the highest formation in the theater.

Joint service staffs at the strategic bases will arrange collection from the base installations, allocation to ships or aircraft, and protection while in transit. The evacuation of casualties, prisoners of war, and equipment needing repair will be arranged directly between the formation and its own beach or forward administrative area according to the availability of returning ships, aircraft, or road transport, or will be met by demands on the highest formation in the theater. Formations will also draw on their own beach area for such stocks—for example, of fuel—as may be bulk stored in that area.

In general, while demands will originate from field formations, arrangements for delivery should be made from the rear forward. For all this, plentiful long-range wireless communications, solely devoted to administration, will be essential.

With this system of administration, and with such control, the temporary disruption of any one formation beach area or forward administrative area need not present a serious situation. The multiplicity of beach areas in particular will allow the temporary switching of the administrative support of any one formation to the beach or forward administrative area of another. Thus the utmost flexibility will be achieved, and full freedom of tactical maneuver will be available to all commanders in the field.

Conclusion

In general, the administrative organization for the support of overseas land forces in a future war must be designed to take account of the conditions imposed by the use of the nuclear weapon, both strategic and tactical. The possible use of that weapon makes two things essential; first, that the machinery of administrative supply be as little as possible liable to serious dislocation under nuclear attack, and second, that it permits both the strategic and tactical mobility which is essential for land warfare when the nuclear weapon is in use. The two are complementary and both can be achieved only by the utmost flexibility.

Until the detailed organization of field formations to fight the nuclear land battle has been evolved, it is not possible to assess the exact requirements and organization of the administrative machine. Its apparent expensiveness will be offset by the over-all reduction in demands on resources and in the number and size of the formations deployed in nuclear war. In any case, its implications must be accepted if the essential flexibility and survival of the administrative system is to be achieved. Furthermore, being divorced from the restricting and canalizing influence of vast maintenance areas, static installations, and major ports and rail centers, this system will provide dispersion, mobility, and the greatest possible flexibility both for the deployment of overseas forces and for their tactical freedom of maneuver.

This is true for nuclear war, toward which the system is directed, but it will be no less true for limited war and for campaigns within a global war in which the nuclear weapon may not be used. Without some such system for the administration of land forces in overseas theaters not only will those forces lack vital mobility in battle, but they will not survive a nuclear war in the future.

Fighting and whipping the enemy is among the least difficulties we encounter; the great question of supplies necessarily controls all operations. So the American General Taylor wrote to his government during the Mexican War of 1845. Many great commanders have said much the same since, but it is certain that administration has never been of such importance in the sphere of military thinking and planning as it is today.

It is not necessary to throw away all we have learned about the tactics and techniques of logistics in prior wars merely because we can cause larger explosions to take place at greater distances, any more than it has been necessary to throw away the Field Service Regulations that guide the operations of our larger combat units. It is necessary, of course, to make appropriate modifications to increase dispersion, to guard against fallout, to expedite the delivery of critical items, and to organize areas for damage control, repair of atomic destruction, and protection against infiltration.

A unit well-trained and experienced in logistic fundamentals should be readily prepared to meet the expected in atomic war and improvise and modify its operations to whatever extent is necessary to meet unforeseen developments.

Lieutenant General Carter B. Magruder

BOOKS OF INTEREST TO THE MILITARY READER

INTERNATIONAL POLITICS. By Frederick L. Schuman. 745 Pages. McGraw-Hill Book Co., New York. $7.50.

BY LT COL IRVING HEYMONT, *Inf*

This is the sixth edition of a text which has for 25 years been considered one of the most authoritative books on the subject. It is a stimulating and comprehensive introduction to international relations in terms of origins, forms, forces, and prospects of the nations of the world.

This revision includes events up to and including 1958. Professor Schuman offers a detailed, documented, and challenging analysis of the Hungarian Revolution and the Mid-East war of 1956. The political, economic, and diplomatic background and aftermath of the East European and Egyptian crises are presented in full. The alternatives available to policymakers involved and the calculations which moved them to act as they did are logically presented with due cognizance of the factors posed by the threat of atomic war.

The problem of underdeveloped areas are explored in detail. The coverage of various attempts, internal and external, to overcome poverty through democratic and totalitarian economic planning will be of particular interest to the military man concerned with the problems of possible local war.

In one comprehensive volume that is well-written and not pontifical, the non-expert student of international affairs has a ready reference. This book should be in the library of every military man.

A. P. HILL: LEE'S FORGOTTEN GENERAL. By William Woods Hassler. 249 Pages. Garrett & Massie, Inc., Richmond, Va. $3.95.

BY LT COL FOSTER F. FLEGEAL, *Armor*

It is strange that no one previously has delved into the career of this "Fighting Virginian," for here is the first biography to deal with A. P. Hill's career.

We follow A. P. Hill on his rise from colonel of the Thirteenth Virginia to command of the famous "Light Division."

As his career moves from Manassas to the last days at Petersburg, the problems faced by all Confederate commanders become apparent and the hardships of the Confederate soldier come to life.

A. P. Hill took care of his men and his ability as a battlefield commander won him their respect. However, his personality caused him to be continually waging a personal battle with his superiors. After the Seven Days' Battles he became so involved in a dispute with Longstreet that only General Lee's intervention prevented a duel being fought. This resulted in a transfer to Stonewall Jackson's command.

Hill succeeded to Jackson's command after Chancellorsville and his performance of duty was spotty and irregular. This book does a good job of analyzing the possible causes of the change in his conduct of duty after rising to corps commander.

This is a valuable volume for the Civil War student, to be used primarily as a reference book.

THE GREAT ARMS RACE. A Comparison of U. S. and Soviet Power Today. By Hanson W. Baldwin. 116 Pages. Frederick A. Praeger, Inc., New York. $2.95.

BY MAJ PATRICK W. POWERS, *Arty*

We are still the first military power of the world. If we do certain things, we can probably remain so, though we shall never again hold the unmatched power position that we formerly enjoyed at the end of World War II.

Mr. Baldwin, military editor of *The New York Times*, reaches this conclusion after a clear and convincing evaluation of the military power of the United States and Russia.

The book covers a range of subjects that are of vital interest to the military reader. A comparison of military strength underscores the accepted position that Russia's greatest advantage is in landpower. We still have a lead in long-range piloted aircraft and at sea. But some of our elements of strength are unbalanced.

An interesting discussion advocates that a general war is unlikely. The reason is that our bases which surround the Soviet Union have more nuclear delivery systems available than can be eliminated in one simultaneous attack.

The most important part of the book deals with the areas of weakness of national and military power to include a keen analysis of our defense organization.

He makes a point of emphasizing that " . . . man is probably the weakest element in the American formula for security." He also discusses the topics of space, functioning of the Joint Chiefs of Staff, the principles that must dominate military policy, and the effects of national decision-making organizations on the military. An improvement in the coverage of this material would be the inclusion of a similar analysis of Soviet areas of weakness and organization.

This short book is definitely recommended to all military readers because it is one of the most complete and authoritative summaries of the elements of our military power.

OPERATION SEA LION. German Plans for the Invasion of England 1939-1942. By Ronald Wheatley. 201 Pages. Oxford University Press, New York. $7.00.

BY MAJ FREDERICK A. SMITH, JR., *Inf*

This book presents an informative account of the tentative operation plans to which the German High Command gave the code name "Sea Lion." It was written initially as a background study for the benefit of the historians who were writing the official United Kingdom history of World War II. Because of its unique historical value, the study was later expanded into the present publication. Therefore, the book describes in great detail the genesis and development of the German plans and assesses the reasons for their rejection.

This book is not to be confused with an earlier publication by the same title—*Operation Sea Lion* by Peter Fleming. The two books overlap considerably in subject content; however, the discriminating difference between them is the source material from which each was derived. Mr. Wheatley had access to the original German documentary evidence; Peter Fleming did not. Military official records, of course, carry far greater authority than statements by individuals made long after the events. The latter are subject to more exaggeration and lapse of memory.

Operation Sea Lion has great value to the military reader. It not only throws new light on Hitler's serious intentions of invading England, but it also serves as an interesting study of the operational activities of the German High Command.

INFANTRY UNIT LEADER'S GUIDE. By Major Charles Multop, Infantry, and Captain William G. Barret, Infantry. 187 Pages. The Military Service Publishing Co., Harrisburg, Pa. $2.50.

BY LT COL RODGER R. BANKSON, *Inf*

This is the third edition of this handy, fact-crammed, paperbound pocketbook. It brings up to date the field manual type collection of instructions, suggestions, and information for infantry unit leaders, and should prove just as valuable as its earlier versions.

OUR NUCLEAR ADVENTURE. Its Possibilities and Perils. By D. G. Arnott. 170 Pages. The Philosophical Library, Inc., New York. $6.00.

BY LT COL GEORGE D. CARNAHAN, *OrdC*

The author, who attended the Geneva Conference of Atom Scientists, has carried out considerable research on radioactive substances. His lucid style and coverage of subject matter is understood easily by persons of little detailed technical knowledge.

His opening statement is, "This book was written for ordinary people who might reasonably ask why they should bother to read it, life being difficult enough anyway." In the next few sentences he spells out specifically why this book is important to the ordinary man. Basically, his reasons point out that our chances of escaping disaster increase the more people understand the danger of our nuclear adventure. The rapid development of nuclear power has brought mankind to the moment of decision, for the world now is faced with the choice between limitless opportunities for progress—or inevitable self-destruction.

This book, written on the optimistic assumption that we are not going to be killed in a nuclear war, tries to define the problems and hazards of nuclear power and to answer the technical questions that arise. The author cautions:

Whatever else you do, do not skip Part One. If you do, much that follows will be unintelligible. But if you can last from page 3 to page 30 you will be able to read the rest with profit; you will be able to study the daily press with insight and occasional amusement; and you will be able to keep abreast of all future developments of the nuclear adventure as they unfold in all their fascinating detail.

The detailed descriptions of various nuclear weapons make for fascinating reading.

THE KREMLIN. Eight Centuries of Tyranny and Terror. By Jules Koslow. 244 Pages. Thomas Nelson & Sons, New York. $5.00.

BY MAJ ROBERT H. ALLAN, JR., *CE*

Mr. Koslow is one of the few Americans who has visited the Kremlin which is now off limits to visitors. Following his visit to Moscow and the Kremlin in 1932 he spent two years in intensive study and research before he began to write this fascinating story of the symbol of Russia.

At times the book becomes a little tedious with descriptive architectural detail. But the character of the Russian rulers from the 10th century to the present is woven carefully into the story of the Kremlin and its growth and development. Almost unconsciously the reader absorbs a chronological history of the legacy of terror which has been handed down to present-day Communist Russia and its influence on economic and political growth.

This book provides the military student of Russia with a deep insight into the religious and ethnical development of the Russian people as influenced by the leaders who ruled from within the sinister walls of the Kremlin.

THE UTAH EXPEDITION—1857-1858. Edited, with Introduction and Notes by LeRoy R. Hafen and Ann W. Hafen. 375 Pages. The Arthur H. Clark Co., Glendale, Calif. $9.50.

BY LT COL ROBERT M. WALKER, *Arty*

This documentary account of the United States military movement under Colonel Sidney Johnson and the resistance of Brigham Young and the Mormon Nauvoo Brigade concerns one of the strangest episodes of American history. The first complete account of that expedition, the reactions to it, the Mormon measures of resistance, the heroic efforts of Thomas L. Kane that brought ultimate reconciliation, as well as the immediate causes of the expedition, are told in a well-edited presentation.

The book spotlights the suspicion, misunderstanding, and malice which almost culminated in bloody war. Each actor in the drama relates his part through diaries, letters, speeches, and other documents.

This is history as it should be written, as engrossing as a novel, illustrating in the words and documents of the times a little known but extremely interesting segment of the history of the growth of the Nation.

THE CADET. By Cadet B. K. Jervell, Jr. 64 Pages. West Point Publishers, Inc., Newburgh, New York. $1.00.

BY LT COL HOWARD L. FELCHLIN, *Inf*

This brief pictorial satire of cadet life at West Point deftly portrays the spirit and feeling of a West Pointer as he toils through four arduous years at "his rock-bound highland home." Civilian and military alike will know the cadet far better after perusing this interesting book.

EXECUTIVES: MAKING THEM CLICK. By Joseph Dean Edwards. 242 Pages. University Books, Inc., New York. $4.00.

THE UNITED STATES AIR FORCE REPORT ON THE BALLISTIC MISSILE. Its Technology, Logistics, and Strategy. Edited by Lieutenant Colonel Kenneth F. Gantz. 333 Pages. Doubleday & Co., Inc., Garden City, New York. $4.00.

BY MAJ KEITH C NUSBAUM, *Arty*

In a series of collected articles the editor presents what amounts to a top-level briefing by the United States Air Force. Those officers best able to tell the Nation and the world about the policies and programs for the ballistic missile capability of the Air Force do so in terms seldom technical, always interesting.

From a preface by the Chief of Staff, USAF, General Thomas D. White, and an introduction by Major General Bernard Schriever, in charge of the Ballistic Missile Division, Air Research and Development Command, each short article by an authoritative author discusses a particular phase of the USAF ballistic missile program. Of particular interest is an article by General Thomas S. Power, Commander in Chief, Strategic Air Command, which explains the over-all aims, objectives, and actions which SAC has for achieving an early intercontinental ballistic missile capability, as well as the impact of this program on SAC.

A great deal of useful historical information on the early development of the USAF missile capability is summarized, together with the current status and future plans for the use of ballistic missiles by the Air Force. One article, by Colonel Alexander Sheridan of the Air War College, presents a lucid, if biased, picture of doctrine for use of ballistic missiles in a global war.

As a source of reference material which can be used without security restrictions, this quasi-official publication should prove invaluable to those who seek the USAF point of view on a timely and vital subject.

THE KNIGHTS OF BUSHIDO. The Shocking History of Japanese War Atrocities. By Lord Russell of Liverpool. 334 Pages. E. P. Dutton & Co., New York. $5.00.

MAJ FRED M. STOWELL, *AGC*

The author of *The Scourge of the Swastika*, dealing with infamies perpetrated against humanity by the Nazis, has now brought forth a similar investigation into the record of their one-time allies. The never to be forgotten picture that emerges is one of stark horror.

This is a factual record of World War II brutality on the part of the Japanese forces to prisoners of war, civil internees, and the population of occupied countries. He discloses that one-fourth of the Allied POW's captured in the Pacific theater of war perished in captivity. The facts reveal not only atrocities by individual officers and men, but also the inhumanity of the highest military and civil officials.

The murder of captured aircrews, conditions in Japanese prison hulks, and prison camps, frightful death marches such as Bataan, and the tortures used by the Japanese Army police are described.

It is perhaps late in the day to revive painful memories of deeds long since judged and atoned by the punishment of the guilty. At the same time this book would better serve its purpose if it were less of a lawyer's brief for the prosecution.

The title *Knights of Bushido* derives from the chivalric order that flourished in feudal Japan. This book in contributing to the history of World War II strips away the hypocritical mask of these self-styled "Knights."

MANAGERIAL PSYCHOLOGY. An Introduction to Individuals, Pairs, and Groups in Organizations. By Harold J. Leavitt. 335 Pages. The University of Chicago Press, Chicago, Ill. $5.00.

THE PASSING OF TRADITIONAL SOCIETY. Modernizing the Middle East. By Daniel Lerner. With Collaboration of Lucille W. Cevsner. 466 Pages. The Free Press, Glencoe, Ill. $7.50.

BY LT COL HAROLD E. BEATY, *CE*

Like the physical features of the earth, human behaviors are changing constantly as a direct result of environment. The rate of change often is retarded by tradition established through customs and historical events. Tradition has strong sentimental value and often hampers progress. In our world today, where modernization is important for survival of nations, tradition becomes a stumbling block. Traditional society is coming to an end. Pastoral life is yielding to the modern industrial discipline.

Communication and mobility are two important elements in breaking through the isolation barriers of territorial boundaries. The Middle East, which has been bound by tradition for 20 centuries or more, is undergoing a severe change today. Since this is an important power vacuum area, modern nations are seeking to influence the nations concerned.

Mr. Lerner seeks to explain why and show how individuals and their institutions modernize together. The book seeks, further, to exemplify this conception in the behavior of modernizing individuals and institutions in the living Middle East. In 1951 a series of field studies were completed by the Bureau of Applied Social Research, Columbia University, of Turkey, Lebanon, Egypt, Iran, Jordan, and Syria. Israel and Iraq were omitted since Israel is a new nation and Iraq would not permit the study teams freedom in that country. Mr. Lerner has briefly and concisely summed up the results of the survey team's sampling. His personal observation made from a tour of these countries in March 1958 adds significantly to this well-written book.

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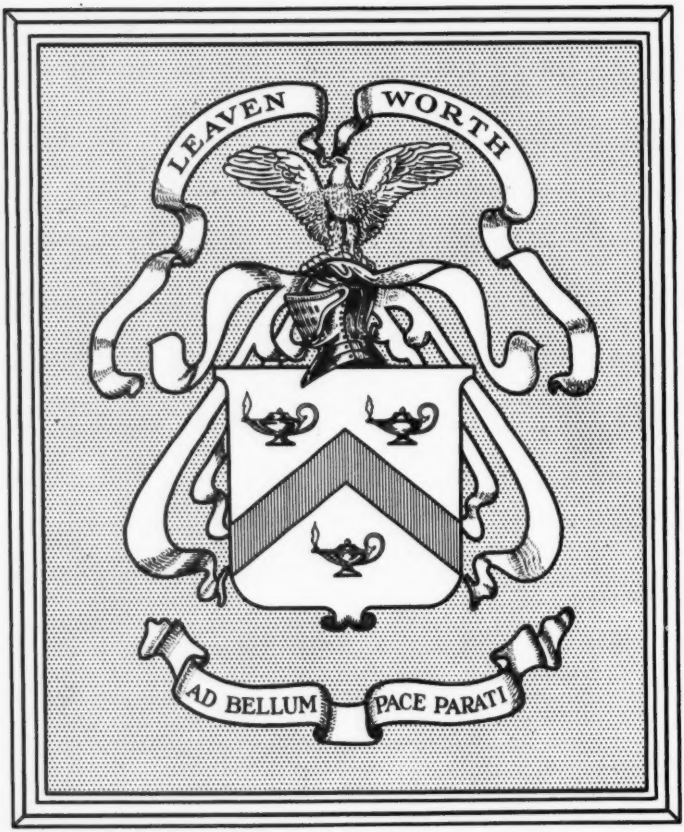

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